GENERAL SPECIFICATIONS

FOR

STREET PAVING

2015 EDITION

DEPARTMENT OF PUBLIC WORKS

CITY OF NEW ORLEANS

LOUISIANA

Adopted by the Commission Council on November 5, 2015 by Ordinance No. 026696 MCS

INTENTIONALLY LEFT BLANK

OFFICIALS

Of The

CITY OF NEW ORLEANS

MITCHELL J. LANDRIEU
Mayor

Councilmembers at Large:

JASON WILLIAMS
President

STACY HEAD
Vice President

District Councilmembers:

SUSAN G. GUIDRY
District A

LATOYA CANTRELL
District B

NADINE RAMSEY
District C

JARED BROSSETT
District D

JAMES AUSTIN GRAY II
District E

MARK D. JERNIGAN
Director of Public Works

NGUYEN D. PHAN
Chief Engineer, Department of Public Works

SHARONDA WILLIAMS
City Attorney

COPIES OF THIS BOOK MAY BE OBTAINED FROM:

City of New Orleans
Department of Public Works
1300 Perdido Street - Room 6W02
New Orleans, Louisiana, 70112

Price: $100.00 per printed copy or downloaded at no cost at http://www.nola.gov/dpw/

DEPARTMENT PERSONNEL MAY OBTAIN COPIES OF THIS BOOK FROM:

City of New Orleans
Department of Public Works
Engineering Division
1300 Perdido Street - Room 6W03
New Orleans, Louisiana, 70112

Title VI Notice: The Department of Public Works (DPW) fully complies with Title VI of the Civil Rights Act of 1964 and related statutes, executive orders, and regulations in all programs and activities. DPW operates without regard to race, color, national origin, income, gender, age, and disability. Any person who believes him/herself or any specific class of persons, to be subjected to discrimination prohibited by Title VI may by him/herself or by representative file a written complaint with the Louisiana Department of Transportation (LaDOTD). The LaDOTD Title VI Program Manager may be reached via phone at 225-379-1361. A complaint must be filed no later than 180 days after the date of the alleged discrimination.

DPW meetings are conducted in accessible locations and materials can be provided in accessible formats and in languages other than English. If you would like accessibility or language accommodation, please contact the Title VI Community Outreach Specialist at DPW at 504-658-8000.

Table of Contents

INTENTIONALLY LEFT BLANK

PART I - GENERAL PROVISIONS

SECTION C101
DEFINITIONS OF TERMS

Whenever in these specifications and contract, the following terms or pronouns in place of them, are used, the intent and meaning shall be interpreted as follows, unless such interpretations shall be inconsistent with or repugnant to the manifest intent and context of the said specifications and contract.

C101.01 AGENT: Person or persons authorized to act on behalf of the Director (See "Director").

C101.02 BIDDER: Any individual, partnership, firm or corporation submitting a proposal for the work contemplated, acting directly or through a duly authorized representative.

C101.03 CALENDAR DAY: Any day of the week including Saturday, Sunday and Holiday, regardless of weather conditions, beginning and ending at midnight.

C101.04 CHIEF PROCUREMENT OFFICER: The duly authorized representative of the Director of Finance through whom proposals are issued and received in completed form from bidders.

C101.05 CITY OF NEW ORLEANS OR **CITY:** The incorporated municipality or City of New Orleans in the State of Louisiana.

C101.06 CONTRACT: The written agreement between the City of New Orleans and the Contractor setting forth obligations of the parties thereunder for performance of the prescribed work. The contract documents consist of the proposal, the General Specifications for Street Paving, the Special Specifications, the contract bond and the plans, including all modifications thereof incorporated in the documents before their execution; as well as any and all drawings and supplemental agreements which reasonably could be required to complete the construction in an acceptable manner.

C101.07 CONTRACT BOND: The security designated in the Uniform Bid Form to be furnished by the bidder as surety for the faithful performance of the contract and the specifications in all their details, except that said contract bond shall not cover maintenance after acceptance of the work.

C101.08 CONTRACT TIME: The number of working days or calendar days allowed for completion of the contract, including authorized time extensions. If a calendar date of completion is shown in the contract, in lieu of a number of working or calendar days, such work shall be completed by that date.

C101.09 CONTRACTOR: The individual, partnership, firm or corporation to whom the contract is awarded.

C101.10 COUNCIL: The duly constituted and authorized governing body of the City of New Orleans.

C101.11 DEPARTMENT: The Department of Public Works of the City of New Orleans.

C101.12 DIRECTOR OF FINANCE: The authorized head of the subdivision of the City Government charged with receiving, expending and accounting of public money.

C101.13 DIRECTOR OR **DIRECTOR OF PUBLIC WORKS:** The authorized head of the subdivision of the City Government having jurisdiction over public streets, public alleys, bridges and related structures. Whenever the word "Director" appears herein, it is understood that an appointed agent may act for the Director.

C101.14 FIELD CHANGE AUTHORIZATION: A document outlining agreements reached in the field which authorizes changes necessary in the work. This document shall become a part of a plan change.

C101.15 FORCE ACCOUNT: A method of payment for extra work based on expenses incurred, including the actual cost of labor, material and equipment required to do the work.

C101.16 LaDOTD: Louisiana Department of Transportation and Development

C101.17 MAJOR ITEM: An item included in the contract as awarded, that has a total cost equal to or greater than ten (10%) percent of the original contract amount.

C101.18 MUTCD: Manual on Uniform Traffic Control Devices.

C101.19 PLAN CHANGE: An approved document issued to the Contractor covering changes in the plans or quantities, or both, and establishing the basis of payment and time adjustments for the work affected by the changes.

C101.20 PLANS: The contract drawings which show the location, type, dimensions and other details of the prescribed work consisting of, but not limited to, general and detail Drawings including such working drawings as may be furnished or approved by the Director.

C101.21 PROJECT: A specific undertaking of construction as described by the contract.

C101.22 PROPOSAL: The offer of a Bidder, on the prescribed form, to perform the stated work and to furnish the labor and materials at the prices quoted on the bid form.

C101.23 PROPOSAL GUARANTY: The security, commonly known as the bid bond, designated in the Uniform Bid Form to be furnished by the bidder as a guaranty of good faith to enter into a contract with the City of New Orleans if the contract is awarded to him.

C101.24 QUALIFIED PRODUCTS LIST (QPL): Lists maintained by the LaDOTD's Materials and Testing Section for products that do not lend themselves to the preparation of meaningful specifications, or for which repetitive full testing is too time consuming or expensive to be practical

for routine project control.

C101.25 SPECIAL SPECIFICATIONS: The contract specifications which include project specific details as well as additions and revisions to the General Specifications.

C101.26 SUBSTANTIAL COMPLETION: When the Contractor considers the Work ready for full occupancy or utilization by City, Contractor shall declare in writing to the Director that the Work is substantially complete and request that the Director issue a notice of substantial completion.

The date, upon which the Director agrees to issue the certificate of substantial completion, shall govern in regard to assessment of any liquidated damages, as described elsewhere in these specifications.

C101.27 SURETY COMPANY: The corporate body which is bound with and for the Contractor, who is primarily liable, and which engages to be responsible for his payment of all debts pertaining to and for his acceptable performance of the work for which he had contracted.

C101.28 TESTING LABORATORY: An independent testing laboratory retained by the City for the purpose of testing materials entering into the project.

C101.29 THEORETICAL SECTION: Theoretical Section shall be the measurement of the volume based upon horizontal distances and average end areas taken from the plans and the end areas will be bounded by the original ground line and the theoretical pay line as shown on the plans.

C101.30 TRUCK MEASURE: Truck Measure is based upon the capacity of hauling vehicles. Truck Measure is the volumetric measurement of a specific truck used for the hauling of material. Computation of truck volume shall be made in accordance with LaDOTD's EDSM III, 1.1.12. Contractor shall have hauling vehicles certified in accordance with these specifications as well as State and other local agency requirements.

C101.31 UNIFORM BID FORM: The approved or prepared form on which the bidder is to submit or has submitted his proposal for the work contemplated.

C101.32 WORK: The furnishing of labor, material, equipment, transportation supervision and tools or other facilities necessary to complete the contract.

C101.33 WORKING DAY: A calendar day, with exceptions stated herein, on which weather and other conditions not under control of the Contractor will permit construction operations to proceed for at least five (5) continuous hours of the day with the normal working force engaged in performing the controlling items of work.

No working days will be charged for the following days:

(1) Saturdays and Sundays.
(2) City recognized holidays or non-working days that are defined as regular legal holidays or special holidays that are proclaimed by the Mayor or fixed by the City Council.

(3) Days on which delays are attributable to the direct effect of strikes, riots or civil commotions.

Should the Contractor elect to work on the afore-stated days, and is so authorized by the Director to do so, these days will be charged as working days. The Contractor shall be charged for these days and shall reimburse the City for any overtime expenses required for services rendered on the above referenced days.

BIDDING REQUIREMENTS (CONTACT BUREAU OF PURCHASING FOR FULL REQUIREMENTS)

SECTION C106
CONTRACT PLANS AND SPECIFICATIONS FOR THE WORK

C106.01 The Contractor shall keep one copy of all plans and specifications on the work site, in good order, available to the Director.

C106.02 In the event of discrepancy or conflict in provisions of the various contract documents, precedence shall be given to the provisions as contained in the document which appears first in the following list: Proposal/bid, Special Specifications, Construction Plans, General Specifications and Standard Plans for Street Paving, Sewerage & Water Board General Specifications and Standard Drawings, the latest edition of LaDOTD Louisiana Standard Specifications for Roads and Bridges. The conflicting provision in the document appearing later in the above list is declared "null and void".

CONTRACT

SECTION C121
ASSIGNMENT AND SUB-LETTING

C121.01 A contract cannot be assigned without the prior written consent and approval of the Director.

C121.02 Any supplemental contract or agreement which the Contractor may propose to enter into with a sub-Contractor for the construction or execution of a portion of the contract shall not create any contractual relationship between any sub-Contractor and the City, and, the employment of a sub-Contractor shall in no way be construed to mean that the Contractor and his sureties are released from any of their responsibilities under the contract.

SECTION C122
RIGHTS OF VARIOUS INTERESTS

Whenever work being done by the City's forces or by other contractors is contiguous to work covered by this contract, the respective rights of the various interests involved shall be established by the Director.

The Contractor shall cooperate with officials of utility companies to avoid delays in completion of work due to non-removal or non-adjustment of utilities.

Some utility facilities will be removed, relocated, or adjusted in accordance with agreements between the City and utility companies. Such work may be underway concurrently with the Contractor's work and within construction limits covered by this contract.

The Contractor shall consider in his bid all permanent and temporary utilities, lines and appurtenances in their present or relocated positions and that no additional compensation will be allowed for delays, inconvenience or damage sustained by him due to interference from the said utility lines and appurtenances or the operation of moving them.

SECTION C123
ANNULMENT OF CONTRACT BY CITY

If at any time the Director shall be of the opinion that the Contractor is unnecessarily delaying any part of the work or is willfully violating any of the provisions of the specifications or is executing the same in bad faith, or if the Contractor shall become insolvent or declared bankrupt, or shall commit any act of insolvency or bankruptcy, or shall make any assignment for the benefit of creditors, or for any cause whatsoever shall fail to carry on the work in an acceptable manner, the Director shall, in writing, advise the Contractor wherein he believes the contract is being violated and at the same time demand immediate correction. Should the Contractor fail on receipt of such notification to immediately comply with the specifications, it shall then be the duty of the Director to at once, in writing, notify the bondsman of the Contractor of the Contractor's dereliction and at the same time

request a compliance with the specifications by the bondsman. Should the bondsman in turn fail to effect a compliance with the specifications within five (5) days, it shall then be the duty of the Director to promptly report the fact to the Mayor and the Mayor shall be privileged to annul the contract, which annulment shall carry with it forfeiture of all monies then due the Contractor or that may become due the Contractor, together with the full amount of the bond described in Section C119 of these specifications such forfeiture operating not as a penalty, but as acknowledgement of liquidated damages. The Director shall then have the power to place on any work such labor as he may deem advisable, by contract or otherwise, and to complete the work, or any part thereof, and to use such materials, equipment, and or property of the Contractor, as he may find at the site, or to procure other materials for the completion of the contract and to charge the cost of said labor and additional materials to the contract.

SECTION C124
CONTRACTORS RIGHT TO STOP WORK OR TERMINATE CONTRACT

If the work should be stopped under an order of any court or other public authority, for a period of ninety (90) or more calendar days through no act or fault of the Contractor or of anyone employed by him, or if the City should fail to pay the Contractor in accordance with Section C138 any sum not in dispute and certified by the Director, then the Contractor may upon seven (7) days written notice to the City and the Director, stop or terminate this contract and recover from the City payment for all work executed and accepted and any loss sustained upon any plant or materials and reasonable profit and damages. Such written notice shall be made certified U.S. Mail.

PROSECUTING THE WORK

SECTION C125
PUBLIC CONVENIENCE

C125.01 During the progress of the work the safety of the public, transit users, pedestrians, and residents in the actual and immediate vicinity of the project area must be provided. Convenient access to driveways, houses and buildings along the street must be maintained wherever possible. Temporary approaches to and crossings of intersecting streets and sidewalks must be provided for and kept in good condition wherever practicable. Detour or warning signs shall be provided and placed in advance of the actual project site. The size and information included on such signage will be dictated by the Director of Public Works, Chief Traffic Engineer, or his/her appointee. Sidewalks shall be kept in a clean and passable condition, free of debris and hazardous conditions.

C125.02 Garbage Collection and Mail Service: The Contractor shall ensure that garbage collection and mail service shall have an access provided for on a continuous basis during construction of the project.

C125.03 Noise Control: Contractor shall comply with the city code - Article IV "Noise" to avoid excessive noise. Such measure shall be appropriate for the normal ambient sound levels in the area during working hours. All construction machinery and vehicles shall be equipped with practical sound muffling devices, and operated in a manner to cause the least noise, consistent with efficient performance of the work.

C125.04 Dust Control: The Contractor is responsible to comply with federal, state and local laws and regulations controlling pollution of the environment, including air, water and noise. The following are dust control methods that are required by the City to control fugitive dust from LAND CLEARING ACTIVITIES, EARTH MOVING ACTIVITIES, STORAGE PILES, DISTURBED SURFACE AREAS OR INACTIVE CONSTRUCTION SITES, UNPAVED ROADS AND SHOULDERS, PAVED ROAD TRACK-OUT. *Use of these control methods **DOES NOT** automatically assure compliance with the Federal and State regulations. **Use of more than one method may be necessary.***

CONTROL METHOD	DESCRIPTIONS
Watering	1. Application of water by means of water trucks, hoses, and/or sprinklers at sufficient frequency and quantity prior to conducting, during, and after construction activities. 2. Need sufficient quantities to keep the surface moist. 3. Pre-application of water to the depth of the proposed cuts or equipment penetration. 4. Apply at sufficient frequency and quantity to develop a surface crust. 5. Required application frequency will vary according to soil type, site-specific conditions, weather conditions, and amount of vehicle traffic.

Coverings	1. Tarps, plastic, or other materials can be used as a temporary covering. 2. When used, coverings must be anchored to prevent wind from removing them.
Wind fencing	1. Three to five foot barriers with 50% or less porosity, adjacent to roadways or urban areas. 2. Normally used in conjunction with watering or chemical stabilization.
Cover haul vehicles	Entire surface should be covered with water or tarps once vehicle is fully loaded.
Wheel washers	1. Should be placed where vehicles exit unpaved areas onto paved areas. 2. May be adjusted to spray entire vehicle including bulk-stored material in haul vehicles.
Sweep/Clean roadways	Either sweeping or water flushing may be used. Requires routine street sweeping if subject to material accumulation.
Site access improvements	1. Install a gravel pad or grizzly at the access point to your site. 2. Designate a single site entrance and exit. 3. Stay on established routes. 4. Reduce speed may need to be used with watering or chemical stabilization. 5. Maintained Gravel/Recycled Asphalt to a size and depth effective in controlling dust.
Restrict Access	1. Install fencing around the perimeter of property. 2. Install “No Trespassing” signs. 3. Eliminate Unnecessary travel, Restrict access or redirect traffic to reduce vehicle trips.
Altering loading and unloading procedures	1. Confine loading and unloading procedures to the downwind side of storage piles. 2. May need to be used in conjunction with wind sheltering.
Location	Locate haul roads as far from existing housing as possible.
Pre-grading planning	1. Grade each phase separately and time to coincide with the construction phase. 2. Grade entire project but apply chemical stabilizers or ground cover to graded areas where construction is scheduled to begin more than 60 days after grading is complete.
Operate off-road haul vehicles appropriately	1. Mix material with water prior to loading, and/or to entire surface of material after loading. 2. Empty loader slowly and keep bucket close to the truck while dumping. 3. Apply water as necessary during loading operation.
Alternative haul vehicles	Use bottom-dumping haul vehicles.
Chemical Stabilizers	1. Most effective in areas that are not subject to daily disturbances or on areas where active operations have ceased. 2. Apply per manufacturer’s recommendations. 3. Best for use on storage piles subject to infrequent disturbances. 4. Not recommended for high volume or heavy equipment traffic use.
Vegetation	Establish as quickly as possible when active operations have ceased.

During periods of high winds	1. Apply chemical stabilizers per manufacturer's directions, and prior to expected wind events. 2. Apply water as necessary, and prior to expected wind events. 3. Install temporary covers and Cover all haul vehicles. 4. Stop work and vehicle activity temporarily. 5. Clean streets with water flushing.

SECTION C126
PERFORMANCE OF WORK

C126.01 Construction Progress Schedule: Prior to beginning the work the Contractor shall submit to the Director a Construction Progress Schedule giving a satisfactory schedule of operations that provides for completion of the work within the contract time. This schedule shall be on the prescribed bar graph form and shall allocate the entire contract time. The Contractor shall have copies of the schedule available at the preconstruction conference.

If the Contractor's operations are affected by changes in the plans or the amount of work, or if the Contractor has failed to comply with the approved schedule, or if requested by the Director, the Contractor shall submit a revised Construction Progress Schedule for approval. This revised schedule shall show how the Contractor proposes to prosecute the balance of the work. The Contractor shall submit the revised schedule monthly or within 14 calendar days after the date of request or by the Director.

The approved Construction Progress Schedule will be used as the basis of establishing the controlling item of work, charging contract time and as a check on the progress of the work. The Construction Progress Schedule shall show only one controlling item of work for each contract day. If the Construction Progress Schedule has not been approved prior to the issuance of the Notice to Proceed, the Director will establish the controlling work item and charge contract time accordingly.

The most recent approved Construction Progress Schedule shall be maintained on-site by the Contractor at all times during the course of the contract.

C126.02 Work shall be commenced within ten (10) days after receipt of written Notice to Proceed from the Director. The entire project shall be completed within the time stipulated in the contract. If the Contractor is delayed at any time in the progress of the work by any act or neglect of the City, or by changes ordered in the work, or by strikes, lockouts, fire, unusual delay in transportation, unavoidable casualties or any causes beyond the Contractor's control, or by any causes which the Director shall decide to justify the delay, then the time of completion shall be extended for such a reasonable time as the Director may decide. Written claims for time extensions shall be made within thirty (30) days of the first date of claim. But neither the extension of time for any reason beyond the date herein fixed for the completion of the work, nor the acceptance of any part of the work shall constitute a waiver by the City of the right to abrogate the contract for abandonment or delay in the manner provided by Section C124 of these specifications. Upon completion of the work, and before acceptance and final payment, the Contractor shall clean up the work and adjacent property and remove therefrom all surplus and discarded materials, rubbish and temporary structures, and shall leave the street or streets and the median (if any), upon which he

has been engaged in a neat and clean condition throughout the entire length of the improvement. For Working Day projects, work shall automatically be suspended on Saturdays, Sundays, all legal holidays, and after five-thirty (5:30) P.M. until seven (7:00) A.M. of the following day, unless permitted in writing by the Director. Said permission will not be unreasonably withheld. If the Contractor is delayed at any time in the progress of the work by any act or neglect of the City, the Contractor may be compensated for such delay at the discretion of the Director.

C126.03 The number of days allowed for completion of the work will be stated in the contract.

The Director will furnish the Contractor a monthly statement showing the number of days charged to the contract for the preceding month and the number of days specified for completion of the contract. The specified days for completion will not include additional days to be added for plan changes. The Contractor will be allowed thirty (30) days in which to file a written protest setting forth in what respect said monthly statement is incorrect; otherwise, the statement shall be deemed to have been accepted by the Contractor as correct.

If a protest is filed by the Contractor, the Director will conduct such reviews and investigations as required to rule on the protest within thirty (30) days from the date the statement is furnished by the Contractor. The number of days charged as listed, or revised within the allotted time, shall become final at the end of this thirty (30) day period, subject to change only through legal action.

When the contract time is on a calendar daily basis, it shall consist of the number of calendar days stated in the contract beginning with the date stipulated in the Notice to Proceed, including Saturdays, Sundays, holidays and non-work days. All calendar days elapsing between the effective dates of written orders by the Director to suspend work and to resume work for suspensions not the fault of the Contractor will be excluded.

When the contract time is a fixed calendar date, it shall be the date on which all work on the project shall be completed.

The contract time only for the work as awarded is based on the original quantities and includes the time necessary to procure material, equipment and an adequate labor force to complete the work in quantities set forth in the proposal. The contract time will be increased for performance of extra work commensurate with the following:

(1) Mathematical Increase: Upon completion and acceptance of the project, the original contract time will be adjusted proportionally to the amount of the final estimate divided by the original contract amount, except that, in the case of total project cost underrun, the original contract time will not be decreased.

(2) Increase for Difficulty: When the contract is altered and the Contractor requests additional contract days, the document authorizing or ordering alterations will show (a) the number of additional days justified, (b) the number of days added by anticipated overrun in costs (if any) due to alterations and (c) the difference between these two numbers. The difference between the two numbers will be added to the contract time.

(3) In no event shall the total contract time exceed the amount of contract time actually

expended.

If the Contractor finds it impossible, for reasons beyond his control, to complete the work within the contract time as specified or as extended in accordance with the provisions of this Subsection, the Contractor may, at any time prior to the expiration of the contract time as extended, make timely written request to the Director for an extension of time setting forth therein the reasons which the Contractor believes justify granting his request. The Contractor's plea that insufficient time was specified is not a valid reason for extension of time. If the Director finds that the work was delayed because of conditions beyond the control and without the fault of the Contractor, the Director may extend the contract time in such amount as conditions justify.

Apart from extension of time for unavoidable delays and the waiving of any applicable liquidated damages, in no event shall the City or Engineer be liable to the Contractor, any Subcontractor, supplier, or any other person or organization, or any surety, and no payment or allowance of any kind shall be made to the Contractor as compensation for damages because of hindrance or delay for any cause in the progress of work, whether such delay be avoidable or unavoidable.

When substantial completion has been certified by the Director, daily time charges will cease. Daily time charges will recommence after a punch list has been prepared and given to the Contractor. Daily time charges will continue to accrue until all punch list items have been completed to the satisfaction of the Director.

C126.04 Should the Contractor fail to complete the work within the time specified in the Uniform Bid Form and allowed by the Director as provided for in these specifications, the Contractor shall pay to the City, not as a penalty, but as acknowledged liquidated damages, the sum per day stipulated in the Uniform Bid Form for each working day that he is delinquent. This amount shall be reported to the Director of Finance, who will deduct the same from any balance then due or which may become due the Contractor. The City will not ask the Contractor to waive "notice of default".

C126.05 Construction Progress Photographs: Construction photographs are a mandatory requirement of this contract. Contractor shall be responsible for the production of construction photographs as provided herein. The Director shall designate the subject of each photograph.

Notwithstanding any other provisions of these specifications, the Contractor shall take a minimum of 24 photographs at a minimum of eight (8) different locations per pay period. The intent of the photographs is to record the work in progress and show general views of the project as well as interesting items of the work. Photographs of each work item shall be taken before work begins, and after completion of work, as evidence of work performed.

Additionally, for each pay request the Contractor shall provide before, during, and after photographs of each work item that is being invoiced. The photographs should be taken from the same vantage point for each work item. The photographs shall be taken in sufficient frequency to clearly document the damaged area and all stages of the repair work performed. The intent of these photographs is to the document the construction has been performed in order to facilitate the City with requesting reimbursement for the work.

All photographs shall be produced by a competent photographer, and shall be color photographs of commercial quality. Digital Photography: Use 2.1 megapixel density or greater for photographs. Submit digital photographic files in JPEG file format. Photos shall be identified with description of view, date photographed, photographer's name, project number and name, and name of Contractor.

Photographic files become the property of the City. Do not publish photographs without written consent by the City. Submit one set of Progress Photographs with each Application for Payment at the times established for submittal of Applications for Payment. Monthly Applications for Payment shall be deemed incomplete if not accompanied by the required Progress Photographs. Contractor's failure or election to not submit a monthly Application for Payment shall not affect the requirement for monthly Progress Photographs.

No direct payment will be made for construction photographs.

C126.06 Field Office: For each major street project or as directed by the Director, the Contractor shall provide a field office (or an office trailer) on an approved site in close proximity to the work in accordance with the following requirements.

The field office shall be weather tight and constructed of wood, metal, masonry or other approved material for the purpose of housing the personnel, plans, records and reports as necessary. The field office shall have a minimum floor space of 160 square feet (15 sq m), or other approved size, that provides sufficient space with a minimum ceiling height of 7 feet (2.1 m). The field office shall have at least one outside door and have sufficient windows. The field office shall have electric lighting and power outlets as directed. The building and contents shall be secured by suitable locks and catches. The Director shall be afforded access to the field office at all times and shall be provided with a set of keys as necessary. The Contractor shall provide suitable desks, chairs and file cabinets for personnel using these facilities. The field office shall be heated and air conditioned, and have approved sanitary facilities. The field office shall be furnished, equipped, satisfactorily maintained, moved as directed, and subsequently removed from the project upon completion of construction.

The cost shall be included in Bid Item C727 (51) – Mobilization.

C126.06 Red-line drawings: Contractor shall provide manually marked-up "red line" drawings to the owner. The original contract drawings shall be modified to show all additions, deletions, and other changes made during construction to pavement, water, sewer, and drainage facilities. Drawing modifications shall include both a markup of the graphics and a brief written explanation describing any changes. Wherever applicable, revisions shall include updates to details, sections, index, notes, drawing call-outs, plan, and plan & profile views.

Each Sheet of the red line drawings shall include a stamp showing: RED-LINE DRAWINGS, name of Contractor, Superintendent's signature, and Date. Drawings shall also include: All field changes, any change in line or grade from the original drawings, location of mains and house service connections, and the limits of pavement removal and replacement.

To promote accuracy; during construction red line drawings shall be updated on a bi-weekly basis

with copies provided to the project engineer as work is completed for each block. Redlines shall be jointly reviewed/developed by the Contractor and Resident Inspector and discussed at each construction progress meeting. The Contractor shall furnish a final set of redline drawings prior to final inspection. The Contractor shall furnish redline drawings at no direct payment.

SECTION C127
PREPARATION AND RESPONSE FOR TROPICAL EVENTS AND OTHER WEATHER-RELATED EMERGENCIES

If there is an emergency declared by the federal, state, or city government in Orleans Parish, or in any portion thereof, or in any surrounding parish which affects the ability of the project to continue on schedule, then all work on this project shall cease until such time as the Contractor is instructed to resume work by the Department of Public Works, which has jurisdiction over this project.

If there is any type of work which must proceed to prevent harm to persons or property, or damage to the project itself, then Contractor should immediately contact the Department of Public Works for necessary instructions. If Contractor is unable to contact the Department of Public Works, the Contractor may perform the work necessary to prevent such harm in accordance with industry safety standards.

Contractor shall be entitled to an extension of time for the period of the stoppage, but shall not be entitled to any additional compensation by reason thereof.

SECTION C128
PERMITS AND REGULATIONS

C128.01 Permits and licenses of a temporary nature necessary for the prosecution of the work shall be secured and paid for by the Contractor.

C128.02 The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as planned and specified. The Contractor is required to observe all laws and ordinances relating to the obstructing of streets, maintaining signals, keeping open passageways and protecting them where exposed to danger, and all general ordinances affecting him or his employees or his work hereunder in his relations to the City, or any persons, and to obey all laws and ordinances controlling or limiting the Contractor while engaged in the prosecution of the work under this contract. If the Contractor observes that the plans and specifications, or either, are at variance with laws and regulations, he shall promptly notify the Director in writing, and of any necessary changes in the work. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, rules or regulations, and without such notice to the Director he shall bear all costs arising therefrom.

C128.03 Required Safety Provisions: It shall be the duty and responsibility of the Contractor to provide all reasonable measures necessary to insure safety of the public. Types and placement of barriers, warning signs, lights, etc. shall be reviewed by the Director and be in conformance with the MUTCD.

C128.04 Required Traffic Provisions. The Contractor shall take appropriate measures to assure that traffic conditions as near normal as possible shall be maintained at all times so as to minimize inconvenience to the occupants of the adjoining property and to the general public. The Director may permit the Contractor to close streets and alleys to all traffic for a prescribed period of time.

Warning signs shall be placed far enough in advance of the construction operations to alert traffic within a public street, and cones or other approved devices shall be placed to channel traffic in accordance with instructions of the Director. Fire hydrants, fire stations, fire escapes, driveways and any other vital facilities as designated by the Director shall not be blocked or interfered with in connection with the work required for the approved work. The Contractor shall maintain safe crossings for vehicular traffic at all street intersections unless exception is made by the Director and the Contractor shall maintain safe crossings for pedestrians at intervals of not more than approximately one block of street. Subject to the foregoing exception, the work shall be so arranged that at least one-half of the street shall be open for traffic at all times unless otherwise approved by the Director.

The Contractor shall employ the services of a Professional Engineer, licensed by the State of Louisiana, who has background in traffic flow and control, to prepare and submit a detailed traffic control plan on behalf of the Contractor for review and approval by the Director. Such services will be paid under item C713(51).

The detailed traffic control plan is required on all streets and sidewalks where access will be impeded by work, except as designated by the Director.

C128.05 Notifications Required: The Contractor shall give 48 hours advanced notification of work and street impairment to the police, fire and other city departments and to the general public. The Contractor shall designate person(s) who can be contacted and shall be available on a 24 hour, seven days per week basis throughout the life of the project. The name and telephone number of the designated individual(s) shall be furnished to the Director prior to starting construction. The individual contacted shall be able to respond to emergencies occurring along the project area during normal, after work and holiday hours.

SECTION C129
TEMPORARY SIGNS, BARRICADES PAVEMENT MARKINGS, CONSTRUCTION SIGNING, TRAFFIC MAINTENANCE AND PUBLIC SAFETY

C129.01 Description: With reference to Section 713 of the LaDOTD Louisiana Standard Specifications for Roads and Bridges, Latest Edition, Contractor shall be required to furnish, install and maintain temporary construction barricades, lights, signals, pavement markings and signs; provide flagmen; and comply with all other requirements regarding the protection of the work, workmen and safety of the public. Signs, barricades, temporary pavement markings, etc., shall conform to the details shown on the plans, the MUTCD and these specifications.

C129.02 Liability: Signs and barricades, and arrangements thereof, as shown on the plans, are minimum requirements and shall not be construed as negating requirements for additional proper and special signs and barricades, etc., as may be required by the Director. Appropriate signs for special conditions shall be furnished and installed as directed. Requirements as to proper signs, barricades or other safety precautions promulgated by the Contractor's insurers are not negated by these specifications.

These specifications shall not be construed as relieving the Contractor of any of his responsibilities for the safety of the traveling public, for any liability in connection therewith, or compliance with City and State laws or ordinances.

C129.03 Construction Requirements: Signs, barricades and related devices will be required when the Contractor's work is in progress on portions of the work covered by the Notice to Proceed, or when operations are suspended but the traveled portion of the road or sidewalk is not in a safe condition for the traveling public. During such times that barricades are not in place, appropriate regulatory signs shall be erected and maintained by the Contractor.

If partial Notice to Proceed is issued, the Contractor shall immediately begin erection of signs and barricades over the affected portions of the project to the extent necessary to comply with the requirements herein. When the full Notice to Proceed is issued, barricades will be erected at the beginning and end of the project, and signing throughout the remainder of the project shall be completed.

In no event shall construction work under the contract begin until signs, barricades and other traffic control devices, as provided above, have been erected and approved.

C129.04 The Contractor shall cooperate with the Director in placing of signs, as well as the City's forces responsible for maintenance of City signs, so that appropriate signs are in place at all times.

Signing shall remain in place and be maintained by the Contractor, supplemented by additional signs as required, throughout the life of the contract. Signs placed by the Contractor shall not be removed, unless required by the Director, until the project is completed and can be removed only upon final acceptance of the work.

Signs, barricades and related devices furnished and placed by the Contractor shall, upon removal, remain his property.

C129.05 Pavement Markings, color, width, type and material requirements of markings shall be in accordance with the MUTCD, and plan requirements. Temporary centerline and/or lane line markings shall be placed on each lift of asphaltic concrete surfacing subjected to traffic during construction. Temporary markings shall be in place at the end of each day's asphaltic concrete surfacing or cold planing operations on all lanes that are open to traffic.

Roadway centerlines and/or lane lines shall be marked with four (4') foot long stripes placed on approximate forty (40') foot centers. On the final surface, temporary markings shall be placed with sufficient accuracy to avoid conflict with permanent striping. The Contractor shall satisfactorily remove all temporary pavement markings by approved methods after completion of permanent

striping.

A pay item for this section is included in Section C713.

SECTION C130
MATERIALS, EQUIPMENT, EMPLOYEES
CONTRACTOR QUALITY CONTROL

C130.01 The Contractor shall provide and maintain an adequate quality control system along with personnel, equipment, supplies, and facilities necessary to obtain samples, perform tests and provide quality control of work.

The Contractor shall perform quality control sampling, testing and inspection during the work at a rate sufficient to ensure that the work conforms to the project specifications.

C130.02 Unless otherwise specified, all materials shall be new and workmanship, materials, appliances and equipment shall be of good quality and suitable for the character of work for which they are required.

C130.03 Disorderly, intemperate, or incompetent persons shall not be allowed upon the work. The Contractor's superintendent who neglects or refuses to comply with the instructions of the Director, shall, at the request of the Director, be promptly removed from the project.

All Contractors' employee personnel shall be qualified and capable of performing the necessary work in a competent and workmanlike manner as to assure the City that the quality of the work is in accordance with the general acceptance of the trade for such work. Any representative of the Contractor or Subcontractor who, in the opinion of the Director, does not perform in a skillful manner or is disorderly shall be, upon written request, immediately removed by the Contractor or Subcontractor. A person removed shall not return to the work site without written approval. If the Contractor fails to remove such a person or fails to furnish suitable and sufficient personnel to properly prosecute the work, the Director may suspend the work by written notice.

C130.04 All materials must be submitted in accordance with the instructions of the Director not less than ten (10) days in advance of commencing work. Materials furnished which do not fully comply with the requirements of the specifications shall be immediately removed from the work upon order of the Director.

SECTION C131
REMOVAL OF IMPROPER MATERIAL

All materials to be provided by the Contractor shall be of the best quality, and if the Contractor shall bring or cause to be brought on the work materials which do not conform to the requirements of the contract, the Director shall order the same to be removed at the expense of the Contractor. Should the Contractor refuse to remove the improper material, the Director may have the material removed at the expense of the Contractor.

SECTION C132
REMOVAL OF EQUIPMENT

In the case of annulment of this contract before completion from any cause whatever, the Contractor, if notified to do so by the City, shall promptly remove any part or all of his equipment and supplies from the property of the City, failing which, the City shall have the right to remove such equipment and supplies at the expense of the Contractor.

SECTION C133
SUSPENSION OF WORK

C133.01 The Director will have the authority to suspend the work wholly or in part due to the failure of the Contractor to correct conditions unsafe for the workmen or the general public; for failure to carry out provisions of the contract; for failure to carry out orders; for such period as he may deem necessary due to unsuitable weather; for conditions under the control of the Contractor considered unsuitable for the prosecution of the work or for any other condition or reason affecting the public welfare, health and safety. No allowance shall be made to the Contractor for damages sustained or alleged to have been sustained by him on account of such suspension of work. The period of such suspension, to be determined by the Director and recorded in writing shall be added to the time specified in the proposal for the completion of the work.

C133.02 If the work is suspended, all materials delivered at the work but not yet placed therein shall be neatly piled so as not to constitute an obstruction or hazard and shall remain the responsibility of the Contractor. Contractor shall have the prerogative to remove materials, tools, etc. to protect same during such time of work suspension.

SECTION C134
WARRANTY REQUIREMENTS

The Contractor guarantees, by his signing of the contract, all materials and workmanship provided under the contract to be free of defects for a period of one year after the date substantial completion is recorded in the Mortgage Office. This guarantee will include all electrical and mechanical equipment and apparatus.

The Contractor guarantees by his execution of the contract, that for a period of one year after the date of substantial completion of the project or a portion thereof as established by the Director all necessary repairs to or replacement of said defective warranted equipment, apparatus, or material and workmanship shall be made by the Contractor at no cost to the City.

All instruction sheets that are required to be furnished by the manufacturer for materials and supplies and for operation shall be delivered by the Contractor to the Director prior to substantial completion of the project, and shall include the manufacturer's standard written warranty for each piece of mechanical and electrical equipment or apparatus furnished under the contract.

When the contract includes landscaping or maintenance of any form of plant life, unless otherwise provided, the warranty period for this portion of the contract shall be one year or two consecutive

planting seasons, whichever is longer, commencing after the date substantial completion is recorded in the Mortgage Office.

CHANGES, ACCEPTANCE, AND PAYMENT

SECTION C135
CHANGES IN THE WORK

The Director shall have the right to make alterations in the line, grade, plan, form or dimensions of the work herein contemplated, either before or after the commencement of the work and without notice to the sureties. If such alterations diminish the quantity of work to be done, they shall not constitute a claim for damages for anticipated profits for the work deleted.

But when the reduction in quantity of work is a material part of the work contemplated, the Contractor may be entitled to compensation, except for anticipated profits, as determined by the Director, including overhead and equipment charges which the Contractor may have incurred in expectation of the quantity of work originally estimated unless specifically provided herein:

A material part is the decrease of twenty-five (25%) or more of the original bid quantity for any major item. A major item is defined as an item included in the contract as awarded, that has a total cost equal to, or greater than ten (10%) percent of the original contract amount.

If the quantity for any major item of work is increased by 25% or less of the original bid quantity the increase shall be paid according to the quantity of work actually done and at the price established for such work under this contract. If its quantity is increased by more than 25%, its unit bid price may be negotiated at the discretion of the Director, before the work is performed.

SECTION C136
EXTRA WORK

C136.01 The Contractor shall be prepared to do any extra work for which there is no price or quantity included in the contract but which is deemed necessary to fully complete the work. Such extra work shall form a part of the contract and shall be executed in the manner as if it had been included in the original estimate of quantities.

C136.02 Extra work shall be paid for at a unit price or lump sum to be agreed upon in advance in writing by the Director and the Contractor. Where such price and sum cannot be agreed upon by both parties, or where this method of payment is impractical, the Director may order the Contractor to do such work on a force account basis. The Contractor shall submit a detailed cost breakdown with each request for additional work.

C136.03 In computing the price of extra work on a force account basis, the Contractor shall be paid for all foremen and labor actually engaged on the specific work, at the current actual rate of wage for each and every hour that said foremen and labor are engaged in such work, plus twenty-five (25%) percent of the total thereof for superintendence, overhead and profit and use of small tools, hand tools and power tools not exceeding 2 HP; and in addition, the Contractor shall be allowed an amount sufficient to cover bond, Workmen's Compensation and all other Federal, State, or Municipal Employer payroll taxes. The Contractor shall furnish satisfactory evidence of the rate or rates paid for such bond, insurance and taxes.

For all material used, the Contractor shall receive the actual cost of such material delivered at the site of the work, as shown by original receipted bill, to which shall be added fifteen (15%) percent for superintendence, overhead and profit.

For any equipment used that is owned by the Contractor, the Contractor shall be allowed an appropriate rental based upon the latest rental price as determined by the "Rental Rate Blue Book" in their most recent publication of their rental rate booklet, to which ten (10%) percent shall be added for fuels, oils, lubricants, tires, tracks and other general maintenance items.

Regardless of whether or not the Contractor owns or rents equipment, payment for use of such equipment shall be the minimum cost that would be incurred by the Contractor if it were rented on a hourly, daily, weekly or monthly basis whichever is cheapest for the City. The minimum cost shall be determined as the minimum number of days, including rain days, holidays and weekends, the equipment is required to be on the job site to complete the work in an expeditious manner. The Contractor shall also be paid the actual cost of transportation for any equipment which he owns and which he has to transport to the project for the extra work, to which no per cent shall be added.

No compensation for expenses incurred in executing extra work, other than herein specifically mentioned, will be allowed. If the Contractor is required to rent equipment for extra work, he will be paid the actual rental and transportation costs of such equipment, to which ten (10%) per cent shall be added for fuels, oils, lubricants, tires, tracks and other general maintenance items. The basis upon which rental costs are to be charged shall be agreed upon in writing before work is started.

Actual rental and transportation costs shall be obtained from receipted invoices and freight bills.

When the Contractor engages Subcontractors to perform certain portions of the work, he will be paid his actual cost of subcontracting to which ten (10%) per cent shall be added for his superintendence, overhead and profit. The Director reserves the right to approve the sub-Contractor for any extra work.

C136.04 A daily record of extra work done on the force account basis shall be submitted to the Director or his representatives by the Contractor within forty-five (45) days following the execution of the work. No less than two (2) copies of such record shall be made on suitable forms and signed by both the representative of the Director and the Contractor; one copy is to be retained by the Contractor. All bills for materials used on extra work shall be submitted to the Director by the Contractor upon certified statements to which will be attached original bills covering the cost of such materials.

C136.05 Payment for extra work of any kind will not be allowed unless the same has been approved in writing by the Director.

C136.06 If the Contractor deems additional compensation is due for work, material, delays, inefficiencies, disruptions or other additional costs or expenses not covered in the contract or not ordered as extra work, the Contractor shall notify the Director in writing of his intention to make a claim for such additional compensation before beginning the work on which the claim is based or within one working day of encountering the conditions or effects which the Contractor claims entitle him to additional compensation. If such notification is not given or the Director is not afforded

proper facilities by the Contractor for keeping account for actual costs incurred by the Contractor, the Contractor hereby agrees and shall be deemed to waive any claim for such additional compensation. Such notice by the Contractor and the fact that the Director has kept account of the costs as aforesaid shall not be construed as proving or substantiating the validity of any claim.

SECTION C137
MANNER OF ACCEPTANCE

Upon substantial completion of all the work executed under the contract, the same shall be accepted by the Director, in the manner provided for in Section C138 of these Specifications.

SECTION C138
METHOD OF ACCEPTANCE & PAYMENT

C138.01 Payment for the property owner's portion of the cost of the work, and the City's portion of the cost of the work, if any, shall be made in accordance with the provisions of the law regulating and governing the manner and mode of paying for the cost of paving, repaving, surfacing, resurfacing, etc., unless otherwise stipulated in the Uniform Bid Form and Special Specifications.

C138.02 Railroad's or Electric Street Car's portion of the cost of the work when executed under these specifications shall be paid for in the same manner as the City's and Property Owner's portion unless otherwise stipulated in the Uniform Bid Form and project specifications.

C138.03 During the progress of the work the Contractor shall be paid monthly for work completed during the month. These payments shall be made to the extent of: 1. Ninety-five (95%) percent of the value of the work when the original contract value exceeds one million five hundred thousand dollars ($1,500,000.00). 2. Ninety (90%) percent of the value of the work when the contract value is one million five hundred thousand dollars ($1,500,000.00) or less. No allowance shall be made in the computation of monthly estimate for material delivered at the site of the work and not actually put into place, except with the prior approval of the Director. The retained percentage of each monthly estimate shall be paid to the Contractor not less than forty-five (45) days after the date of the recorded acceptance in the Mortgage Office of the Parish of Orleans of the completed work and upon the production of Mortgage Certificate properly dated and signed by the Recorder of Mortgages evidencing the fact that there are no recorded liens or any other encumbrances against the said work or the funds in the hands of the City of New Orleans due the Contractor for said work. Partial payment as hereinabove described will be made on estimates of the work done since the commencement or last previous estimate and shall not in any respect, act as an acceptance of the work to be done therefore or release the Contractor from any responsibility whatever, in connection therewith. At the time of making the final estimate upon the completion of the work as a whole, the entire work shall be subject to revision and adjustment by the Director.

C138.04 Supplemental Payments: A supplemental payment request will be permitted prior to the regular monthly payment when work is performed for which change orders were not approved in time to be included on the previous payment and the amount of the change order involved is sixty thousand dollars ($60,000) or more.

C138.05 Final Payment:

(1) When the contract is substantially complete as defined herein, the Contractor shall request the Director to arrange an inspection for substantial completion with all user agencies. All signs must be up, erected and functioning as part of the substantial completion. This inspection shall take place within ten (10) working days of receipt of the request. The Director will promptly make such inspection, and when the work is found acceptable under the contract and the contract fully performed or substantially completed, the Director shall promptly issue a certificate over his own signature, stating that the work required by this contract has been completed or substantially completed and is accepted by him under the terms and conditions thereof. The entire balance found to be due the Contractor including the retained percentage, less an amount based on the Director's estimate of the fair value of the claims against the Contractor and the cost of completing the unsatisfactory items of work with specified amounts for each item shall be due and payable. A punch list shall be prepared for unsatisfactory items which will be filed with the certificate of substantial completion and shall include reasonable values which may be more than bid price assigned to each punch list item, said amounts to be withheld by the City pending completion of that item by the Contractor. If claims against unsatisfactory items are more than the retainage, then the value of such claims shall be retained by the City. Retainage shall be paid to the Contractor at the expiration of the forty-five (45) day lien period. Deduction may be withheld for incomplete punch list items. The date of substantial completion of a project or specified area of a project is the date when the construction is sufficiently completed in accordance with the contract documents as modified by any change orders agreed to by the parties so that the City can occupy the project or specified area of the project for the use for which it was intended.

(2) Before the final payment is issued, if required in the Special Conditions, the Contractor shall certify in writing to the Director that all payrolls, material bills, and other indebtedness connected with the work have been paid, or otherwise satisfied, except that in case of disputed indebtedness or liens, if the contract does not include a payment bond, the Contractor may submit in lieu of certification of payment a surety bond in the amount of the disputed indebtedness or liens, guaranteeing payment of all such disputed amounts, including all related costs and interest in connection with said disputed indebtedness or liens which the owner may be compelled to pay upon adjudication.

(3) The making of final payment shall constitute a waiver of all claims by the City, other than those arising from unsettled liens, from faulty work appearing within the guarantee period provided in the special conditions, from the requirements of the drawings and specifications, or from manufacturer's guarantees.

(4) If after the work has been substantially completed, full completion thereof is materially delayed through no fault of the Contractor, and the Director so certifies, the Director of Finance shall, upon certification by the Director, and without terminating the contract, make payment of the balance due for the portion of the work fully completed and accepted. Such payment shall be made under the terms and conditions governing final payment.

(5) Outside or user agencies required to accept any portions of the project shall be subject to the provisions of this section. Failure of the outside agency to inspect their area of work within ten (10) working days will not affect or delay the issuance of a certificate of substantial completion.

C138.06 Should the acceptance fail to be recorded within five (5) working days, the Contractor may, at his option, record this document at his cost.

C138.07 Partial Payments: Provided work is prosecuted in accordance with provisions of the contract and with satisfactory progress the Director will make the first progress estimate within two (2) calendar months from the date indicated to begin work in the Notice to Proceed. The Director will determine the progress estimate date. Each successive progress estimate will be made on this same date of each month thereafter until completion of the contract.

Each progress estimate will be an approximation of the proportionate value of the work performed up to the date the estimate is made and will be based on material in place and labor expended thereon, but no more than ninety-five (95%) percent of the total contract price of the work will be paid in advance of final acceptance.

The amount of said estimate, after deducting appropriate retainage and all previous payments, shall be payable to the Contractor.

Monthly estimates will be approximate and subject to corrections in the estimate rendered following discovery of any error in any previous estimates.

Should defective work or material be discovered or reasonable doubt arise as to the integrity of any part of the work completed prior to final acceptance and payment, there will be deducted from the first estimate rendered after such discovery an amount equal in value to the defective or questioned work, and this work will not be included in a subsequent estimate until defects have been remedied or causes for doubt removed.

If the Contractor is not a corporation, the Contractor's Federal Identification Number (if a firm) or Social Security Number (if an individual) shall be furnished to the Director of Finance upon request before payments will be made to the Contractor for any work under the contract.

Payment of the monthly estimates shall not be taken as an admission that the work is done or that its quality is satisfactory, nor as a release of the Contractor from the responsibility for any portion thereof, but the whole work and all particulars relating thereto shall be subject to revision and adjustment by the Director at the time of final acceptance and payment of the final estimate.

SECTION C139
PAYMENT WITHHELD

The City may withhold that portion of the payment to such extent as may be necessary to protect itself against loss from:

(a) Defective work not remedied.
(b) All costs associated with cancelled or failed tests.
(c) Failure of the Contractor to make payments properly to sub-Contractors for material or labor.
(d) A reasonable doubt that the contract can be completed for the balance then unpaid.

When the above grounds are removed payments shall be made for amounts withheld because of them.

SUPERINTENDENCE AND INSPECTION

SECTION C140
DIRECTOR OF PUBLIC WORKS' AUTHORITY

The Director shall have the right to:

(1) Stop the work;

(2) Reject the work;

(3) Have access to work site whenever the work is in preparation or in progress;

(4) Determine the amount or quantity, or the classification of several kinds of work or material, which are to be paid for under the contract;

(5) Coordinate the work with utility companies, railroad companies and all governmental user agencies.

Should the Contractor fail to correct defective work as required in this contract or persistently fail to carry out the work in accordance with the contract documents, the Director may by written notice direct the Contractor to stop the work or any portion thereof until the defective work has been remedied to the satisfaction of the Director. The right to stop the work shall not be construed to create a duty on the part of the Director to exercise this or any other right under the contract. The Director shall also have the right to stop the work should the Contractor fail to maintain contract safety provisions.

The Director will not be responsible for construction means, methods, techniques, sequences or procedures or for safety precautions and programs in connection with the work. These duties and responsibilities are exclusively the Contractor's obligations. The Director will not be responsible for the acts or omissions of the Contractor, Subcontractors or any of their agents or employees, or any other persons performing any of the work.

The Director will have authority to reject work which does not conform to the contract documents. The Director may require special inspections for testing of the work at any stage of preparation or completion. However, this right shall not be construed to create a duty on the part of the Director to exercise this or any other right under the contract.

SECTION C141
SUPERINTENDENCE

C141.01 The Contractor must at all times have an authorized representative on the work site to whom orders can be given; this representative will have full authority to carry out all orders given by the Director, and shall keep on the work, during its progress, a competent superintendent and any necessary assistants, all satisfactory to the Director.

C141.02 The Authorized Representative (superintendent) shall represent the Contractor and all directions given to same by the Director shall be as binding as if given to the Contractor. Directions shall be confirmed in writing upon written request in each case. The Contractor shall give efficient supervision to the work, using its best skill and attention.

C141.03 If the Contractor, in the course of the work, finds any discrepancy between the plans and the physical condition of the locality, or any errors or omissions in plans or in the layout as given by points and instructions, it shall be the duty of the Contractor to immediately inform the Director in writing, and the Director shall promptly verify the same. Any work done after such discovery, until authorized, will be done at the Contractor's risk.

SECTION C142
INSPECTION

C142.01 Duly authorized representatives of the Department will be assigned by the Director to observe the work; their duties will be to see that proper materials are used and that the work is done in accordance with the plans and specifications and to notify the Contractor and the Director of any deficiencies or non-compliance with the project plans and specifications. The right of final condemnation or acceptance of the work shall not be waived by the Director at any time during the progress of the work or after its completion.

C142.02 The Contractor shall be responsible for the faithful execution of his contract and his presence or absence is in no manner to be presumed to relieve in any degree the responsibility or obligations of the Contractor. The decision of the Director shall be final and binding upon all technical questions concerning the execution of the work, in the interpretation of the specifications, and as to all measurements.

C142.03 The Contractor shall notify the Director as to the exact time at which he proposes to begin work so that the Director may provide for the inspection of all materials used and all work done under this contract. Such inspection may extend to all or any part of the work and to the preparation or manufacture of materials to be used, whether within the limits of the work on the street, or at any other place.

C142.04 The Director shall have free access to all parts of the work and to all places where any parts of the materials to be used are procured, manufactured or prepared.

C142.05 The Contractor shall furnish the Director all information relating to the work and the materials therefore, which may be deemed necessary or pertinent, and with such samples of materials as may be required. The Contractor, at his own expense, shall supply such labor and assistance as may be necessary in the handling of materials for proper inspection, or for inspection of any work done by him. The City of New Orleans shall, at its own expense, retain the services of an independent testing laboratory to perform physical, chemical and other pertinent tests on materials entering into the project. All reports on materials tested by the testing laboratory will be sent to the Director and the Contractor stating whether or not the materials conform to these specifications.

C142.06 The duly authorized representatives of the Director shall have no authority to permit deviation from or to relax or extend any of the provisions of the specifications without the written permission of the Director, or his Agent, nor to delay the Contractor by failure to inspect materials and work with reasonable promptness.

C142.07 The Contractor shall provide the Director with a schedule of his intended job progress before work proceeds. This schedule shall be in the form of a Gantt Chart and shall include major items of work and indicate when the Contractor has planned the performance of these work items. The Director may request the Contractor to update this schedule as work progresses under the contract.

SECTION C143
PLANT INSPECTION

Plant inspection may be required for all asphaltic concrete pavements, precast concrete curb and Portland cement concrete. When payment is to be made by the tonnage, haul tickets shall be signed by a representative of the testing laboratory.

The cost of plant inspection shall be borne by the City of New Orleans.

SECTION C144
FINAL AUTHORITY

The Director shall decide all questions which may arise to the quality and acceptability of materials furnished and work performed and as to the manner of performance and rate of progress of said work and shall decide all questions which may arise as to the interpretation of all plans and specifications relating to the work.

INJURY AND DAMAGES

SECTION C145
INJURY TO WORK

The Contractor shall be responsible for all injury which the work may suffer, without respect for cause, until it has been accepted as substantially complete by the Director.

SECTION C146
INJURIES TO PERSONS AND PROPERTY

C146.01 The Contractor shall alone be held responsible for all injuries to persons, and for all damage to the property of the City or others, caused by or resulting from the act of omissions of himself, his employees or his agents, during the progress of, or connected with the prosecution of the work, whether within the limits of the work or elsewhere, and whether under the contract proper or as extra work.

C146.02 The Contractor must protect and support all water, sewer and gas pipes or other conduits and buildings, walls, fences or other properties which may be damaged during the performance of his work. He shall take all reasonable and proper precautions to protect persons, animals and vehicles of the public from injury, and whenever necessary shall erect and maintain a fence or railing around any excavation, and place a sufficient number of warning lights about the work and keep them burning from twilight until sunrise, and shall employ one or more watchmen as an additional security whenever they are needed. He must, as far as practicable and consistent with good construction, permit access to private and public property and leave fire hydrants and catch basins free from encumbrances. He must restore, at his own expense, all injured property caused by any act of omission or commission on his part, or on the part of his agent, including sidewalks, curbing, sodding, pipes, conduits, sewers and other public property, to a condition as good as it was when he entered upon the work.

C146.03 During the progress of any and all parts of the work contemplated, the Contractor shall be required to prohibit and prevent any and all riding, driving on, or using in any manner any portion of such completed work except after the time hereinafter specified. To prevent the use of any completed work as above noted, the Contractor, at his own expense, shall effectually guard such portion of the work, with barriers sufficiently strong to afford the necessary protection.

C146.04 The Contractor shall indemnify and save harmless and defend the City from all suits and actions that may be brought against it by reasons of any injury, or alleged injury, to the person or property of another, resulting from negligence or carelessness in the execution of the work, or because of failure to properly light and guard the same.

C146.05 The Contractor must protect all vegetation or plant life, in whatever form, other than that proposed to be removed, altered or otherwise affected as part of the project. No parking upon, or use of, the median or neutral ground for storage of materials, equipment or supplies shall be permitted and no material, equipment or supplies may be stored or used on any unpaved area below the dripline of any tree unless specifically authorized by the Director. In case of damages of

any type to vegetation or plant life designated to remain in the project area, the Contractor shall replace the items in like kind or repair such damage to the satisfaction of the Department of Parks and Parkways staff without additional compensation.

C146.06 The Contractor must minimize damage to streets used for access to the project for the delivery of materials, equipment or supplies by observing weight and speed limits as defined in the City Code. Access routes to the work site from designated "truck routes" will be established at the pre-construction meeting. The Contractor and his sub-Contractor(s) will be required to adhere to these routes to and from the project site. The routes may be revised by the Director to accommodate the work as it progresses. The Contractor is required to keep the work site clean, particularly the roadways adjacent to the work site. The Contractor shall clear such roadways of dirt, silt, sand or other such material as often as necessary, or as specified by the Director. The work site shall be left in a clean condition at the close of each work day.

SECTION C147
DAMAGES

Should the Contractor be of the opinion at any time that he has sustained damages under this contract, for which he should be compensated, he shall make a written statement to the Director of the nature of the damage claimed within thirty (30) calendar days after sustaining such damages. The Director shall thereupon render a decision in the matter.

SECTION C148
OTHER STATUTES

Unless in direct conflict with the provisions stated herein, all state of Louisiana statutes applicable to construction shall be hereby adopted.

PART II - EARTH WORK

SECTION C201
CLEARING AND GRUBBING

C201.01 DESCRIPTION: This work consists of required clearing, grubbing, removing and disposing of vegetation and debris within the limits of the right-of-way and easement areas, except such items that are designated to remain or to be removed under other items.

This work consists of cutting trees, logs, brush, stumps and debris; excavating and removing stumps, roots, submerged logs, snags and other vegetative or objectionable material; disposing of removed material in a satisfactory manner and cleaning the area. When fencing or utility relocation is required, an area of 10 feet wide, adjacent to and inside the right-of-way line, shall be cleared and grubbed.

C201.02 GENERAL CONSTRUCTION REQUIREMENTS: The Director will designate trees, shrubs, plants and other items to remain. The Contractor shall preserve the items designated to remain. Equipment, materials and supplies shall not be stored in proximity of items designated to remain. Trees shall be removed without damaging items marked to remain. In case of damage to bark, trunks, limbs or roots of vegetation marked to remain, the Contractor shall repair such damage at no direct pay by horticultural and tree surgery practices published by the American Association of Nurserymen (AAN). Trees shall not be felled outside of the right-of-way. Damage outside the right-of-way caused by the Contractor's operations shall be the Contractor's responsibility.

C201.03 CLEARING AND GRUBBING: Clearing and grubbing shall be done within the construction limits and to a point in fills 15 feet beyond the toes of foreslopes and in cuts 15 feet beyond the tops of backslopes, when width of right-of-way permits, or to the limits shown on the plans; also from areas required for outfall ditches and channel changes. Trees, stumps, roots and other protruding vegetative obstructions not designated to remain shall be cleared and grubbed (including mowing when required by the Director). Undisturbed stumps, roots and nonperishable solid objects which will be a minimum of one foot below the subgrade or slope of embankments will be permitted to remain provided they do not extend more than six inches above the original ground line or low water level.

Except in areas to be excavated, stump holes and other holes left from clearing and grubbing shall be backfilled with usable soil which shall be thoroughly compacted.

C201.04 MEASUREMENT: No measurement of area will be made for payment.

C201.05 PAYMENT: Payment for clearing and grubbing will be made at the contract unit price under:

ITEM NO.	PAY ITEM	PAY UNIT
C201(01)	Clearing and Grubbing	Lump Sum

SECTION C202
REMOVAL OF STRUCTURES AND OBSTRUCTIONS

C202.01 DESCRIPTION: This work consists of removal and satisfactory disposal of pavements, sidewalks, curbs, gutters and other obstructions not designated or permitted to remain, except obstructions to be removed under other contract items. It shall also include salvaging of designated materials and backfilling resulting trenches, holes and pits, except the area to be excavated. At locations where pavement, curbs or gutter, sidewalk, driveway, or footlaps are to be removed but are not to be replaced, the Contractor shall backfill the area with selected excavated or other suitable approved material at no direct payment.

C202.02 GENERAL CONSTRUCTION REQUIREMENTS: The Contractor shall remove and dispose of all pavements, sidewalks, curbs, gutters and other obstructions. Designated salvageable material shall be removed, without unnecessary damage, in sections which may be readily transported. Salvageable material shall be stacked at specified storage areas by the Contractor. When no storage sites are specified, salvaged materials shall be delivered to the street maintenance yard. Materials not designated to be salvaged shall be disposed of, off the project, outside the view of the traveling public with written permission of the property owner on whose property the material is placed. Copies of agreements with property owners shall be furnished to the Director prior to beginning of work. Saw cut may be required prior to removal.

C202.03 MEASUREMENT: When the contract stipulates that payment will be made for the removal of specific items on a unit basis, measurement will be made by the unit stipulated in the contract.

If the contract does not include pay items for removal of structures and obstructions, the removal work will not be measured for payment.

Hauling salvaged materials to specified storage sites will not be measured for payment.

Saw cut will be measured by the linear foot unless otherwise noted.

C202.04 PAYMENT: Payment for "removal and disposal of existing Portland Cement Concrete Pavement" shall be made at the contract unit price, including removal of asphaltic concrete pavement, regardless of thickness, on top of the existing Portland Cement Concrete Pavement and curb and gutter bottom if monolithic with pavement.

Payment for removal and disposal of "existing sidewalk, driveway, footlap," "existing curb", "existing curb and gutter bottom", "existing gutter bottom or rolling strip" and "existing asphaltic concrete pavement" shall be made at the contract unit price.

Payment for "saw cut" shall be made at the contract unit price per Linear Foot.

When the removal is an area to be excavated and payment is made under other items, no deduction will be made for those items.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C202(52)(C)	Removal and Disposal of Existing Portland Cement Concrete Pavement.	Square Yard
C202(52)(D)	Removal and Disposal of Existing Sidewalk, Driveway, Foot Lap (Concrete, Brick, Asphalt, etc.)	Square Yard
C202(52)(E)	Removal and Disposal of Existing Curb (Concrete, Asphalt, Brick, Stone, etc.)	Linear Foot
C202(52)(F)	Removal of Existing Curb and Gutterbottom	Linear Foot
C202(52)(G)	Removal of Existing Gutterbottom or Rolling Strip	Linear Foot
C202(52)(I)	Removal of Existing Asphaltic Concrete Pavement	Square Yard
C202(53)(C)	Removal of Existing Concrete Bus Pad	Square Yard
C202(54)(A)	Removal and Disposal of Concrete or Stone Headers	Linear Foot
C202(54)(B)	Removal and Salvage of Stone Headers	Linear Foot
C202(55)	Saw Cut Concrete Curb, Pavement, Side-Walk, Driveway, etc. According to Plans (_" Depth)	Linear Foot
C202(56)	Saw Cut, Wheel Cut or Spade Cut Existing Asphalt, According to Plans (_" Depth)	Linear Foot

SECTION C203
PREPARATION OF ROADWAY PAVEMENT SUBGRADE

C203.01 The roadway pavement subgrade shall be made to conform to the lines and elevations shown on plans, and to the proper crown as prescribed in these specifications.

C203.02 The surface of the finished subgrade shall be parallel to and conform to the cross section of the roadway pavement.

C203.03 Berms, ridges of earth, or other material that will interfere with the immediate discharge of water to the side of the crown shall not be left on the subgrade. The subgrade shall be maintained free from ruts so that it will, at all times, drain properly with no standing water. Excavation shall not exceed the prescribed lines and elevations so as to obviate the necessity for refilling.

Stumps and roots exposed in the preparation of the subgrade shall be, as directed by the Director, either removed or excavated to a depth of not less than one (1') foot below the subgrade and the resultant excavation filled with sand and compacted.

All equipment (excavation, compaction, hauling trucks, etc...) shall be subject to approval prior to usage. When the subgrade strength is sufficiently strong to support construction traffic without rutting, heavy equipment may be used

The subgrade shall be uniformly compacted by light weight roller (five tons). When the subgrade is in a wet condition, it shall be allowed to dry until the material is within reasonable limits of optimum moisture before compaction is attempted.

Upon completion of compaction by light weight roller the exposed subgrade areas shall be properly proof rolled in order to verify suitability of subgrade to receive the base course.

Proof roll shall consist of passing over the exposed surface with a 25 ton (+/- 1-ton) loaded tandem dump truck during dry weather and observed by the Director. Result of observations shall be documented including horizontal limits of area rolled, approximate extent of vertical deflections, and any observed excessive rutting or pumping (soft spots). Excessive rutting shall be considered prolonged deflection (rutting) in excess of 1-inch for new construction or ½-inch for reconstruction. Excessive pumping shall be considered temporary deflection with rebound (pumping) in excess of 1-inch for new construction or ½-inch for reconstruction. Areas of surface soils that are observed to excessively rut or excessively pump under the truck load (unsuitable subgrade) shall be removed to such an extent as directed by the Director, replaced with sand, and compacted under the Unsuitable Subgrade, Excavation, & Sand filling item. Additionally the Director may have testing performed on areas exhibiting excessive rutting or pumping and/or require adjustments or revision to the location or type of geogrid or backfill material to be installed.

When the Contractor encounters subgrade conditions that are impossible to proof roll and equipment is unable to move freely, the Contractor shall notify the Director.

C203.04 When subgrade is approved as the subbase for the pavement base material, it shall be constructed to have, as nearly as practicable, a uniform density throughout its entire width. Wherever the subgrade extends beyond the lateral limits of an old roadway, or wherever an old gravel, macadam, or other hard compacted crust comes within six (6") inches of the elevation of the finished subgrade, such old roadway or crust shall be plowed, loosened or scarified to a depth of at least six (6") inches and the loosened material redistributed across the full width of the subgrade, adding suitable material when necessary, so that when compacted to the required elevation, alignment and cross section, the subgrade will approach as nearly as possible a condition of uniform density. Compaction of the subgrade material shall be accomplished with a self-propelled roller weighing not less than five (5) tons.

Hand tamping portions of the subgrade, when necessary, may be directed by the Director. In such cases where hand tamping is permitted, the tamper shall be of an approved pneumatic type. Berms, ridges of earth, or other material that will interfere with the immediate discharge of water to the side of the crown shall not be left on the subgrade. The subgrade shall be maintained free from ruts so that it will, at all times, drain properly with no standing water. All depressions developing under traffic on the subgrade, or in connection with rolling, shall be filled with suitable material. Rolling shall be continued until the subgrade is uniformly compacted, properly shaped, and true to grade and alignment. It is not intended that the rolling shall be continued beyond this point, as the purpose of rolling is not to produce a subgrade that cannot be further compacted, but to produce a uniformly compacted subgrade. All hauling shall be distributed over the width of the subgrade so far as practicable, so as to leave it in a uniformly compacted condition. After being prepared in the above manner, the subgrade shall be so maintained until the concrete pavement or pavement foundation has been placed thereon. Excavation shall not exceed the prescribed lines and elevations so as to obviate the necessity for refilling. When considered necessary or of assistance in producing a compact, solid surfacing, the subgrade shall be well-sprinkled with water before being rolled.

C203.05 No geotextile or other base or subbase course shall be placed until the subgrade has been approved by the Director.

C203.06 GEOTEXTILE and GEOGRID FOR STABILIZATION: This work consists of furnishing and placing geotextile fabric and geogrid in accordance with these specifications and in conformance with the details shown on the plans.

Geotextile fabric and geogrid shall conform to Section C203.07 and C203.08. Rolls of geotextile fabric and geogrid shall be kept covered at all times until used. Geotextile fabric and geogrid that has been installed shall be covered with embankment within 7 calendar days. When ultraviolet damage occurs, the geotextile fabric and geogrid shall be removed and replaced. The geotextile fabric and geogrid shall be placed at the locations shown on the plans or as directed. Adjacent rolls of geotextile fabric and geogrid will be overlapped or sewn. When rolls are overlapped, the overlap shall be a minimum of three (3') feet, including the ends of the rolls. The top layer of the geotextile fabric and geogrid shall be parallel with adjacent rolls and in the direction of construction.

The geotextile fabric shall be placed as smooth as possible with no wrinkles or folds, except in curved road sections. For curved road sections, the geotextile fabric shall be folded to accommodate the curve. The fold shall be in the direction of construction and pinned or stapled. Ruts that occur during construction shall be filled and compacted prior to placement of geotextile fabric.

Damaged geotextile fabric and geogrid shall be either removed and replaced with new geotextile fabric and geogrid or covered with a second layer of geotextile fabric and geogrid extending three (3') feet in each direction from the damaged area

C203.07 GEOTEXTILE:

Work under this section includes furnishing and placing the specified geotextile on the existing subgrade or base. Geotextile manufacturers are encouraged to furnish engineering assistance during installation of woven fabric. In addition, manufacturers might provide special equipment which will ease handling and installation.

The woven fabric shall meet the following minimum requirements:

1. Grab Tensile Strength - 400 lbs. minimum per ASTM D-4632.
2. Trapezoid Tear Strength - 130 psi minimum per ASTM D-4533.
3. Bursting Strength - 620 psi minimum per ASTM D-3787.
4. Puncture Resistance - 130 lbs. minimum per ASTM D-4833.

The geotextile shall be delivered in rolls to facilitate installation. During shipment and storage the woven fabric shall be wrapped in a heavy-duty covering to protect it from direct sunlight, ultraviolet rays, temperatures greater than 140 degrees F. (60 degrees C.) mud, dirt, dust, debris and abrasion. The manufacturer shall furnish certified test reports showing that the geotextile meets the requirements of this section.

Unless otherwise specified by the manufacturer, installation of woven fabric shall be as follows:

1. The subgrade shall be graded to the elevations required by the plans.
2. Geotextiles which have a difference between the textures of the two sides shall be unrolled with the bearded or fuzzy side down and smooth side up.
3. The geotextile shall be spread in a uniform manner, lapped and in accordance with the manufacturer's recommendations, and stretched taut on transverse direction as required to prevent the subbase from pumping into the sand-shell base. Tears or rips in the fabric shall be patched.

No payment will be made for fabric used in patching or overlaps. Geotextile will be paid for per square yard in place at the price bid in the proposal. This price shall include all labor, equipment and materials required to install fabric according to the plans and specifications.

C203.08 GEOGRID:

The Contractor shall install a prior approved geogrid over the geotextile fabric in full compliance

with manufacturer's recommendations, to the alignment and grades designated, in locations shown on the plans or as directed by the Director. Use only material that has been approved by the Director. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section. The Contractor shall check the geogrid, upon delivery, to assure the proper material has been received.

The geogrid shall be a regular grid structure formed by punching and drawing a continuous sheet of select polypropylene material and shall have aperture geometry and rib and junction cross-sections sufficient to permit significant mechanical interlock with the material being stabilized. The geogrid shall have high flexural rigidity and high tensile modulus in relation to the material being stabilized and shall also have a high level of continuity through all ribs and junctions of the grid structure. The geogrid shall maintain its confinement and interlock capabilities under repeated dynamic loads while in service and shall also be resistant to ultraviolet degradation, to damage under normal construction practices, and to all forms of biological or chemical degradation normally encountered in the material being stabilized.

The geogrid shall meet the following minimum requirements**:**

1. Nominal Aperture size – 0.6 inches minimum to 1.6 inches maximum
2. Ultimate Tensile Strength – 850 lb/ft minimum per ASTM D-6637
3. Tensile Strength at 2% strain – 280 lb/ft minimum per ASTM D-6637
4. Tensile Strength at 5% strain – 580 lb/ft minimum per ASTM D-6637
5. Carbon Black Content – 0.5% minimum per ASTM D-4218

The Contractor may request a product from any geogrid manufacture listed on LaDOTD's Qualified Products List for approval.

Subgrade soil shall be prepared as indicated on the construction drawings or as directed by the Director. Geogrid shall be laid at the proper elevation and alignment as shown on the construction drawings. Geogrid shall be oriented such that the roll length runs parallel to the road direction. Geogrid shall be overlapped a minimum of 2-foot and there is no extra pay for overlapped area. Care shall be taken to ensure that geogrid sections do not separate at overlaps during construction. Placement of geogrid around corners will require cutting of geogrid product and diagonal overlapping of same to ensure that excessive buckling of grid material does not occur. Exercise care during placement of embankment over geogrid so as not to damage geogrid.

C203.09 MEASUREMENT: Roadway excavation, excluding pavement removal paid for in other items, shall be measured by the cubic yard, theoretical section, computed by the average end area methods.

Shape ditches to cross section as shown on the plans shall be measured by the linear foot.

Unsuitable subgrade, excavation, and sand filling, where directed for use by the Director, shall be measured by the cubic yard truck measure.

Geotextile fabric shall be measured by the square yard of covered areas in place. There will be no measurement for overlaps.

Geogrid will be measured by the square yard in place. There will be no measurement for overlaps.

C203.10 PAYMENT: Payment for the accepted quantities will be made at the contract unit prices.

Payment for "Roadway Excavation" shall include excavating, hauling, disposing of the excavated materials.

Payment for "Unsuitable Subgrade Excavation & Sand Filling" shall include excavation, disposal of unsuitable subgrade and replacing this material with sand, graded and compacted.

No direct payment will be made for grading and/or compacting the subgrade.

Payment will be made under:

ITEM NUMBER	PAY ITEM	PAY UNIT
C203(51)	Roadway Excavation	Cubic Yard
C203(53)	Shape Ditches	Linear Foot
C203(58)	Unsuitable Subgrade, Excavation, & Sand Filling	Cubic Yard (Truck Measure)
C203(59)	Geotextile Fabric for Stabilization	Square Yard
C203(60)	Geogrid	Square Yard

SECTION C204
ENVIRONMENTAL PROTECTION AND STORMWATER POLLUTION PREVENTION PLAN

The Contractor shall comply with federal, state, and local laws and regulations controlling pollution of the environment, including air, water and noise. The Contractor shall take precautions to prevent pollution of waters and wetlands with fuels, oils, asphalts, chemicals or other harmful materials and to prevent pollution of the atmosphere from particulate and gaseous matter.

The Contractor certifies under penalty of law that he understands and will abide by the terms and conditions of the following:

(a) Permit LAS000301: Municipal Separate Storm Sewer System MS4 Permit (LAS000301) for the Orleans Parish area. This permit requires a Stormwater Pollution Prevention Plan (SWPPP) for applicable activities;
(b) Permit LAR200000: Stormwater Discharges from Construction Activities from 1 to less than 5 acres (when applicable). This permit requires a SWPPP;
(c) Permit LAR100000: Storm Water Discharges from Construction Activities from 5 acres or more (when applicable). This permit requires a SWPPP;
(d) Section 54-154.1 of the New Orleans Municipal Code.

The use of erosion control features or methods other than those in the contract shall be as directed.

The Contractor's Storm Water Pollution Prevention Plan shall be comprised of all relevant components specified in the U.S. Environmental Protection Agency document entitled, "Storm Water Management for Construction Activities", and shall include Section 204.03, Temporary Erosion Control, the City of New Orleans General Specifications along with applicable supplemental specifications, special provisions, and the plans.

Construction operations in rivers, streams, lakes, tidal waters, reservoirs, canals and other impoundments will be restricted to areas where it is necessary to perform filling or excavation to accomplish the work and areas which must be entered to construct temporary or permanent structures. As soon as conditions permit, streams and impoundments shall be cleared of obstructions placed therein or caused by construction operations.

Frequent fording of waterways with construction equipment will not be permitted.

No residue from dust collectors, concrete mixers, vehicle wash racks, or entrance/exit debris shall be dumped into a stream or drainage structure. Attention is further directed to the federal, state and local air pollution control programs and their rules and regulations regarding air pollution, especially open burning, fugitive dust and asphaltic concrete plant restrictions. The Contractor shall maintain and operate equipment to minimize noise and vibration. Engines shall be equipped with properly functioning mufflers. The Contractor shall assure the activities near noise and vibration sensitive areas, such as churches, hospitals and schools are not unduly disruptive.

C204.01 REQUIREMENTS FOR NEW CONSTRUCTION AND DEQ PERMITS:

(a) Requirements for new construction:

<table>
<tr><td>• UNDER ONE ACRE DISTURBED
(Approx. ½ square block)</td><td>• FIVE ACRES OR MORE DISTURBED</td></tr>
<tr><td>. Storm Water Control Measures (SCMs) in place. (SCMs formerly known as BMP)
. NOI (Notice of Intent) not required.
. Complete Inspection Reports and submit one copy to DPW. Contractor and inspector should keep a copy on file.</td><td rowspan="3">. SCMs in place

. Must have NOI completed, sent to DEQ, and posted.

. Must prepare SWPPP, post prominently

. Must have General Permit posted on site with DEQ permit number for specific site.

. Must complete Notice of Termination (NOT) and submit to DEQ.</td></tr>
<tr><td>• ONE TO FIVE ACRES DISTURBED</td></tr>
<tr><td>. SCMs in place
. Must prepare SWPPP, post prominently
. Must have General Permit posted on site
. NOI not required.
. Complete All Req’d. Reports and submit them to DPW</td></tr>
</table>

(b) Compliance with DEQ Permits:

Description: This work consists of constructing and maintaining the SWPPP (Storm Water Pollution Prevention Plan) and Storm Water Control Measures (SCMs) for all construction sites which include clearing, grading, construction or excavation.

Required steps for disturbed sites exceeding one (1) acre:

1. Prepare a STORM WATER POLLUTION PREVENTION PLAN (SWPPP). This program will show how the Contractor will control runoff from the construction site. The basic idea is to KEEP all soil, dirt and pollutants within the limits of the site. (NOTE: AN EROSION CONTROL PLAN SHEET IS NOT A SWPPP.)

Typical parts of the SWPPP include:

a. Site description and endangered species in the area.
b. Controls to be used to reduce pollution.
  i). Storm Water Control Measures (SCMs)
  ii). Sediment and Erosion Controls to be installed.
c. Inspections and Record Keeping.
d. Site Notice.
e. Certification.

2. Submit a NOTICE OF INTENT (NOI) to DEQ. For LARGE construction sites (larger than 5 acres.) The Contractor has authority to begin as per DEQ permit 48 hours after the postmark date on the NOI.

3. Put up the SITE NOTICE at the construction site.

4. INSTALL all erosion control structures (SCMs) BEFORE starting construction

5. MAINTAIN all SCMs during construction and mark any changes on the SWPPP.

6. INSPECT all SCMs as indicated in the SWPPP and make any needed corrections or changes to the construction site.

7a. For SMALL sites (less than 1 acre), INSTALL SCMs. Inspect, maintain, and keep records.

7b. For MEDIUM construction sites (larger than 1 acre and less than 5 acres), after construction is completed and the soil has been stabilized, fill out a Completion Report and submit it to DPW project manager.

7c. For LARGE construction sites (larger than 5 acres), after construction is completed and soil has been stabilized, fill out a Notice of Termination (NOT) and submit NOT to DEQ (same address as shown below)

Inspection: Contractor shall inspect and repair or replace, as needed, all job site SCMs a minimum of:

- Weekly, and
- Before, during, and after a major rain event, or as necessary.

Contractor shall document each inspection in the SWPPP.

Permits: Permits are required for any clearing, grading, construction or excavation which is larger than 1 acre. The Contractor is responsible to obtain coverage under the Storm Water General Permit with DEQ (Office of Environmental Service, PO Box 4313, Baton Rouge, LA 70821-4313).

Activities EXEMPT from the required permit include:

- Clearing of land SOLELY for agriculture purposes,
- Oil and gas exploration, production, processing, transportation or treatment,
- Repaving roads and reworking utilities and pipelines unless more than 1 acre is disturbed,
- Routine maintenance performed to maintain the original line and grade, hydraulic capacity or original purpose of the facility (include culvert replacement, road patching, shoulder grading, pothole filling, road replacement without adding lanes, tree/brush removal)

Copies of the required DEQ permits shall be submitted to the Department of Public Works.

MEASUREMENT AND PAYMENT: Unless otherwise specified in Section C204.03, No direct payment shall be made for obtaining and maintaining the necessary permits, preparation, installation and inspection of the Storm Water Control Measures (SCMs) including all labor equipment or materials required to complete the Storm Water Management Program (SWPPP).

C204.02 – STORM WATER POLLUTION PREVENTION PLAN (SWPPP) and STORMWATER CONTROL MEASURES (SCMs)

(a) General:

1. The Contractor shall prepare and maintain a Storm Water Pollution Prevention Plan (SWPPP), which describes in specific details the Contractor's program to prevent contamination of the storm water collection system for this project. A suggested Template and Sample SWPPP Inspection Report, as well as other valuable information can be found at EPA's website http://cfpub.epa.gov/npdes/stormwaterlswppp.cfm.

2. Contractor shall implement, maintain, and inspect all erosion and sediment controls identified in the SWPPP. The program shall address both common construction activities and extraordinary events. The Contractor shall remove all temporary SCMs, such as silt fences, catch basin filters, wash areas, etcetera at the end of construction.

3. Contractor shall include Water Pollution Control Drawings (WPCD) in the SWPPP to illustrate the locations, applications, and deployment of the Storm Water Control Measures (SCMs) identified in the SWPPP. The WPCDs shall be included as an attachment to the SWPPP.

4. Storm Water Control Measures (SCMs): The Storm Water Control Measures (SCMs) are techniques, processes, activities, or structures used to reduce the pollutant content of a storm water or non-storm water discharge. SCMS may include simple, non-structural methods such as good housekeeping, staff training, and preventive maintenance. Additionally, SCMs may include structural modifications such as the installation of berms, canopies, or treatment control.

5. The Contractor shall comply with laws, rules, and regulations of the State of Louisiana and agencies of the United States Government prohibiting the pollution of lakes, wetlands, streams, or river waters from the dumping of contaminates, refuse, rubbish, or debris.

6. The Contractor shall submit copies of the SWPPP a minimum of 10 working days prior to beginning construction, to the Director. Contractor shall update the SWPPP as necessary during the work to prevent contamination of the storm water collection system.

7. Before start of work, Contractor shall train all employees and Subcontractors on the approved SWPPP and related WPCD and provide the Department of Public Works with written documentation of said training.

8. Suggested SCMs can be obtained from LA DEQ Small Business Assistance Program, 201 Evans Rd. Bldg. 4, Suite 420 Harahan LA. Phone 504-736-7739.

(b) Construction: The Contractor shall keep a copy of the SWPPP on the job site. The Contractor shall provide continuously at the jobsite all the tools, equipment, and materials necessary to implement the SWPPP at all times from project initiation through completion, including any punchlist or warranty work on the project. At a minimum the following requirements shall be met as applicable, to the maximum extent practicable, at construction sites:

1. Storm Drain System Protection: At the first order of work, the Contractor shall protect the existing storm drain system from entrance of construction debris and pollutants. Such protection shall include implementing the SCMs as outlined in the SWPPP. Protection shall prohibit the discharge of untreated runoff from temporary or permanent street maintenance/landscape maintenance material and waste storage areas from entering the storm drain system. Sediment that is generated on the project site shall be retained using structural drainage controls. In addition, the protection system shall have a minimum of three features:

- **a)** A particulate filter of geosynthetic material securely fastened in place such that it cannot be bypassed without significant physical damage;
- **b)** A prefilter for the particulate filter; and
- **c)** On-hand materials to close off the inlet or opening in the case of a significant pollution spill. Contractor shall monitor and maintain all storm drain inlet protection devices during rain events to prevent flooding.

2. Material Management & Storage: No construction-related materials, wastes, spills or residues shall be discharged from the project site to streets, drainage facilities or adjacent properties by wind or runoff. All materials and/or equipment storage areas where liquid construction materials are placed shall be protected by a physical barrier capable of containing the entire volume of stored liquid materials. During active construction activities, portions of the barrier may be removed for access. However, the barrier materials must be readily accessible for replacement by onsite construction personnel. The barrier must be in place at all times during the absence of Contractor personnel at the storage site. Building materials shall be placed on pallets and covered in event of rain. Do not store materials in the street or gutter area.

3. Equipment & Vehicle Maintenance: Non-storm water runoff from equipment and vehicle washing and any other activity shall be contained at the project site and shall not be allowed to discharge from the project site to streets, drainage facilities or adjacent properties by wind or runoff. The Contractor shall inspect vehicles and equipment on each day of use. Leaks shall be repaired off-site if possible. If necessary to repair on site, the runoff must be contained, or the problem vehicle or equipment shall be removed from the project site until repaired. If necessary, drip pans shall be placed under the vehicles or equipment while not in use to catch and/or contain drips and leaks.

4. SCMs Inspection: The Contractor shall inspect all pollution control SCMs regularly. The Contractor shall also repair/replace any damaged or clogged element on a daily basis. During periods of precipitation where any runoff occurs, the system shall be checked twice a day, seven days a week, whether or not any work has been performed. The Contractor shall keep a monitoring inspection log of each inspection.

5. Spill Prevention & Cleanup Plan: Contractor shall have a spill prevention plan and spill cleanup materials readily available and addressed in the SWPPP. Spills shall be cleaned up immediately using dry methods if possible. Spill cleanup material shall be properly disposed of offsite. Contractor shall keep a record of any spills in the inspection log. In addition, at the end of the project, the Contractor must certify that all contaminated materials have been properly disposed in accordance with the SWPPP.

6. Asphalt & Concrete Activities: Asphalt and concrete activities shall be scheduled for dry weather. Contractor shall prohibit saw cutting during a storm event of 0.25 inches or greater. Store bags of cement away from gutters and storm drains, sealed and covered, protected from rainfall runoff and wind. Place tarp under cement mixer before operating to catch spills. Never dispose of cement washout or concrete dust onto driveways, streets, gutters or storm drains.

7. Sidewalk Washing: The following methods should be utilized to prevent discharge of sidewalk cleaning wastewater into the storm drain system:

a) Sweep and pick up all areas to be cleaned before using water.
b) Manually scrape gum from sidewalks and other surfaces.
c) Must use high pressure and low volume of water with no additives and at an average usage of 0.006 gallons per square foot of surface area to be rinsed.
d) Use a wet/dry vacuum to collect wash water for disposal. Large volumes of wash water may require the use of a small sump pump to remove wash water from the job site.
e) One or more of the following methods are recommended to prevent pollutants from entering the storm drain system:
- Sandbags can be used to create a barrier around storm drains.
- Rubber mats or plugs can be used to seal drain openings.
- Temporary berms or containment pads help keep water on site.
- Use berms of sandbags to direct wash water to landscaping.
- Use large squeegees to accumulate sheet flow for collection.
- Remember to remove plugs, berms, and sandbags or you may be liable for possible flooding.

f) Wash water that contains hazardous waste such as oil-saturated absorbents, water with lead or other heavy metals from oxidized paint, and solvent cleaners requires special treatment and must be disposed of through a hazardous waste facility.

8. Employee SCMs Training: Contractor shall train employees and Subcontractors on SCMs implementation, general good housekeeping, and proper spill containment and cleanup. Before start of work, Contractor shall provide the Department of Public Works and the Sewerage & Water Board with written documentation of training and keep all documentation in the SWPPP.

9. Inspection: Contractor shall maintain SCMS at all times on a daily basis, shall inspect and repair or replace, as needed, all job site SCMS a minimum of:

- Biweekly
- Before, during and after a major rain event.

Contractor shall document the inspections in the SWPPP.

10. Dewatering: Avoid dewatering discharges where possible by using the water for dust control, infiltration, etcetera.

(c) Temporary Erosion Control:

1. This work consists of constructing and maintaining temporary erosion control features shown on the plans or as directed. Installation of temporary erosion control features shall be coordinated with construction of permanent erosion control features to the extent necessary to ensure economical, effective and continuous control of erosion and water pollution throughout the life of the contract.

The Contractor shall comply with a Storm Water Pollution Prevention Plan (SWPPP) and Storm Water Control Measures (SCMS) approved by the Department when conducting clearing or earthwork operations. The SWPPP shall include the erosion control features as shown on the plans, or as directed, in addition to other required components of the SWPPP specified by the US Environmental Protection Agency (EPA) and the Louisiana Department of Environmental Quality (LDEQ). The plan shall indicate the use of contract items and the coordination of this work with the scheduling of clearing and earthwork. SCMs include but are not limited to:

a) All mechanical equipment intended for use at said construction site must be properly maintained,
b) Erect silt barrier fencing around the construction site,
c) Cover all drain inlets in the immediate area of the construction site until all work is completed,
d) Spread and compact all fill material within a short time after delivery (approximately 48 hours),
e) Drive creosote pilings soon after their delivery (approximately 48 hours),
f) Cover any loose piles of dirt or creosote pilings with plastic, if they will not be put into place in a short time,
g) Clean all mortar and cement mixing equipment in such a manner that the discharge does not enter the storm water system, but is removed as solid waste to a proper location,
h) Cover all piles of sand used for mortar with plastic,
i) Do not store fuel, automotive fluids, paint, glue, solvents, plaster, or other petroleum products on site for extended periods of time, or in areas where they are subject to spillage or open to the elements. Such products should remain in their original packaging until ready for use,
j) Maintain proper absorbent and dirking material to guard against accidental spillage of automotive fluids and other liquid products used on site,
k) Seed grass mulch and fertilize (taking care not to over-fertilize) the soil areas of the

construction site after all work is completed,

l) Have all workers and equipment enter the construction area from a single stable entrance,

m) Have all work coordinated by a single Contractor who is responsible for the SWPPP.

2. Control of Erodible Soil:

a) General: The Contractor shall prevent the transmission of soil particles into streams, canals, lakes, reservoirs or other waterways. Except as necessary for construction, excavated material shall not be deposited into streams or impoundments, or in a position close enough to be washed in waterways by high water or runoff. The Contractor shall not disturb lands or waters outside the limits of construction, except as authorized.

b) Adjacent to Waterways: Stream banks shall be kept in their natural state. The Contractor shall not unnecessarily strip protective vegetation in the vicinity of stream banks and shall conduct operations without damage to banks. Banks shall not be excavated except as shown on the plans or as otherwise approved in writing. Work roads requiring bank cuts shall be approved by the Director prior to making such cuts. The banks shall be restored by the Contractor to the satisfaction of the project Director.

c) Adjacent to Property: The location of, and method of operation in, borrow pits, material pits and disposal areas obtained by the Contractor for waste material from the project (other than commercially operated sources) shall be the Contractor's responsibility.

3. Materials: Materials not covered by project specifications shall meet commercial grade standards and shall be approved before being incorporated into the project. No testing of materials used in temporary erosion control features will be required. Acceptance of temporary erosion control materials will be by visual inspection.

a) Mulches: Mulch shall comply with LaDOTD Subsection 1018.19 and emulsified asphalt shall conform to LaDOTD Section 1002. Use of cypress mulch is discouraged.

b) Seeding: Grass shall be an approved quick-growing species suitable to the area, providing a temporary cover which will not compete with permanent grasses. Rye grass is the only acceptable grass for winter cover.

c) Slope Drains: Slope drains may be constructed of pipe, fiber mats, rubble, Portland cement concrete, asphaltic concrete, plastic sheets or other acceptable material.

d) Fertilizer: Fertilizer shall comply with LaDOTD Subsection 1018.16.

e) Silt Fencing: Silt fencing shall be wire-supported or self- supported systems. Other silt fencing systems may be used when approved.

i) Wire-Supported: Wire-supported silt fencing shall consist of standard woven livestock wire, and minimum of 14-gage (2.0 mm diameter) wire, a minimum of 36 inches (900 mm) in height with a maximum wire spacing of 6 inches (150 mm). Posts shall be either wood or steel installed a minimum of 2 feet (0.6 m) in the ground. Filter material shall be burlap weighing approximately 7 1/2 ounces per square yard (0.25 kg per sq. m), approved jute fabric or approved geotextile fabric. Geotextile fabric shall comply with Section 1019, Class F.

ii) Self-Supported: Self-supported silt fencing shall consist of an approved geotextile

fabric suitably attached to posts of either wood or steel installed in accordance with plan details. Geotextile fabric shall comply with LaDOTD Section 1019, Class G.

f) Lime: Agricultural lime shall comply with LaDOTD Subsection 1018.17.

g) Temporary Construction Entrance: Temporary construction entrances shall consist of stone or recycled Portland cement concrete complying with LaDOTD Subsection 711.02, 2 lb (1 kg) class placed on geotextile fabric complying with Section 1019, Class D. The geotextile fabric underliner shall be placed at the locations designated for temporary construction entrances before stone or recycled Portland cement concrete is placed. The stone or recycled Portland cement concrete shall be placed and compacted to the required thickness as directed. This work also includes additional measures required to remove mud from truck tires, such as wash racks, etc.

h) Hay Bales: Hay or straw bales shall be rectangular bales, acceptable to the Director. The average length of bales shall be 34 inches (850 mm) minimum.

4. Exposure of Erodible Earth: The Director may direct the Contractor to provide immediate permanent or temporary erosion or pollution control measures to prevent contamination of streams, lakes, tidal waters, reservoirs, canals or other impoundments or prevent detrimental effects on property outside the right-of-way and damage to the project. Limitations of areas in which excavation and embankment operations are underway shall be commensurate with the Contractor's capability and progress in keeping finish grading, temporary erosion control, and permanent erosion control measures in accordance with the accepted schedule.

5. Incorporation of Erosion Control features: Use of temporary erosion control features will be authorized to correct unforeseen conditions that develop during construction; to control erosion prior to the time it is practical to construct permanent control features; or to provide immediate temporary control of erosion that develops during normal construction operations but is not associated with permanent erosion control features. Permanent erosion control features shall be incorporated into the project at the earliest practical time. Temporary erosion control features will be used as directed in areas where stage construction or other conditions not under control of the Contractor preclude completion of a section of roadway in a continuous manner, or where subsequent construction operations will cause damage to permanent erosion control features.

6. Construction Requirements: Temporary erosion control features shall consist of, but not be limited to, temporary seeding, temporary mulching, sandbagging, slope drains, sediment basins, sediment check dams, erosion checks, artificial coverings, berms, and stone entrances. The Director may direct use of temporary erosion control features or methods other than those included in the original contract. Soil deposits outside the right-of-way shall be immediately removed and the surface repaired at no direct pay. The Director shall have the authority to require the Contractor's operations to be discontinued until erosion deposits have been cleared and the area restored.

a) Temporary Seeding: Seeding shall be done in accordance with LaDOTD Section 717, except that ground preparation will be limited to blading the area. Lime or fertilizer shall be applied in accordance with LaDOTD Section 718; however, lime or fertilizer may be omitted or the application rate reduced as directed.

b) Temporary Mulching: Mulch and emulsified asphalt shall be furnished and applied in accordance with LaDOTD Section 716. Mulch may be omitted or the application rate reduced as ordered. When permanent seeding operations begin, temporary mulch materials may be plowed under during ground preparation.

c) Sandbagging: Sandbags shall be placed as directed.

d) Baled Straw or Hay: Baled straw or hay shall be placed as directed to form checks or dams to control erosion and siltation. Bales shall be properly staked or otherwise secured as directed, as shown on the plans. The bales shall be buried as necessary to prevent scour under the bales. A minimum of 2 stakes shall be driven through each bale.

e) Filter Socks: Filter socks may be used in lieu of baled straw or hay in front of catch basins.

f) Geotextile Filters: Use geotextile filters in combination with filter socks at catch basins in lieu of baled straw or hay.

g) Slope Drains: Slope drains shall be constructed with acceptable materials in accordance with plan details or as directed, if necessary to prevent scour. The discharge area shall be stabilized or protected by temporary riprap as directed. Cost of discharge area protection will be included under the slope drain item.

h) Sediment Basins: Sediment basins shall be constructed in accordance with plan details or as directed.

i) Sediment Check Dams: Check dams shall be constructed at locations shown on the plans or as directed. Check dams shall be constructed before clearing and grubbing or grading in the area is begun unless otherwise directed.

j) Silt Fencing: Silt fencing shall be furnished and constructed at designated locations or other locations, as directed by the Director.

k) Berms: Earth berms shall be constructed as directed to divert the flow of water from erodible surfaces.

l) Unforeseen Conditions: When unforeseen conditions are encountered, the Director may direct the Contractor to construct such temporary devices as required to control erosion during construction. Details may be developed jointly by the Director and the Contractor.

m) Maintenance of Erosion Control Features: The Contractor shall install, construct, repair, and maintain temporary erosion control features within 7 calendar days of being instructed to do so by the Director. Temporary erosion control features shall be inspected at least once every 14 calendar days and within 24 hours after a rainfall event of 0.5 inches or greater. The features are to be maintained as described below and, if required, replaced as directed at no direct pay.

  i) Temporary Seeding: The seeded areas showing erosion after inspection shall be reseeded if necessary.

  ii) Mulches: Mulched areas showing erosion shall be repaired and the mulch reapplied if necessary.

  iii) Straw or Hay Bale Barriers: The bale barriers shall be inspected after each rainfall and time frame as defined above and at least daily during prolonged rainfall. Close attention shall be paid to the repair of damaged bales, "end runs" and undercutting beneath bales.

  iv) Filter Socks and Geotextile Fabric: Ensure that filter socks remain in place and that geotextile filters do not allow runoff to enter the catch basin around the edges.

  v) Slope Drains: Slope drains shall be inspected weekly and after each rainfall as defined

above, and repairs made if necessary. The Contractor shall avoid the placement of any material on and prevent construction traffic across the slope drain.

vi) Sediment Check Dams: Sediment deposits shall be removed when the deposits reach one-half the height of the check dam. Inspections shall be made to insure that the center of the dam is lower than the edges. Erosion around the edges shall be corrected immediately.

vii) Silt Fencing: Sediment deposits shall be removed when the deposits reach one-half the height of the fence. If the fabric on the silt fence decomposes or becomes ineffective, the fabric shall be replaced promptly.

viii) Temporary Stone Construction Entrance and/or Wash Racks: The construction entrance shall be maintained to allow for removal of mud from the tires. The sediment from the wash rack runoff shall be removed once the wash rack is no longer performing as intended.

n) Removal of Temporary Erosion Control Features: Temporary erosion control feature existing at the time of construction of permanent erosion control features shall be removed or incorporated into the soil in such manner that no detrimental effect will result. The Director may direct that temporary features be left in place. Sediment in sediment basins, silt fences, check dams, and other catchment areas shall be removed, replaced with acceptable soils in accordance with LaDOTD Subsection 203.06, and compacted as directed at no direct pay.

C204.03 Protection During Suspension of Operations: Prior to the suspension of operations, the Contractor shall shape the top of the earthwork in such manner as to permit runoff of rainwater and shall construct earth berms along the top edges of embankments to intercept runoff water. Temporary slope drains shall be provided in the earth berm to carry runoff. When such preventive measures fail, the Contractor shall immediately take other action as necessary to prevent erosion and siltation. The Director may direct the Contractor to perform other erosion control work during suspensions of contract time.

C204.04 Measurement: When temporary erosion and pollution control measures are required due to the Contractor's negligence or failure to install permanent controls, such work shall be performed by the Contractor at no direct pay. Required temporary erosion and pollution control work which is not due to the Contractor's negligence will be measured as follows:

When separate items for temporary erosion control devices are included in the contract, and the work is ordered, the quantities to be paid for will be the weight in pounds (kg) of Temporary Seeding and in tons (Mg) of Temporary Mulching; the volume in cubic yards (cu m) of Sandbagging with the measurement of sand being made in a batch box or other satisfactory means; the number of hay bales placed; the length in feet (m) of Temporary Slope Drains measured along the ground surface and Silt Fencing measured along ground surface between end posts; the number of Sediment Basins and Sediment Check Dams acceptably constructed; the number of gallons (L) of emulsified asphalt, and the number of construction entrances.

Temporary erosion control items may be eliminated when conditions do not justify their use.

When temporary erosion control work is ordered and is not covered by contract items, the work shall be performed as extra work in accordance with LaDOTD Subsection 109.04 except that no extra work order will be required prior to starting work.
The construction of temporary earth berms along edges of the roadway to prevent erosion during grading and subsequent operations will not be measured for payment.

In case of failure of the Contractor to control erosion, or siltation, the Director may employ outside assistance or use his own forces to provide the necessary corrective measures, and the cost thereof will be deducted from payments for the work. Partial payments will be withheld until satisfactory temporary erosion control is established.

C204.05 Payment: Payment for temporary erosion control items that are included as contract items will be made at the contract unit prices.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C204(01)	Temporary Sandbagging	Cubic Yard
C204(02)	Temporary Hay or Straw Bales	Each
C204(03)	Temporary Slope Drains	Linear Foot
C204(04)	Temporary Sediment Basins	Each
C204(05)	Temporary Sediment Check Dams	Each
C204(06)	Temporary Silt Fencing	Linear Foot
C204(07)	Temporary Stone Construction Entrance	Cubic Yard
C204(08)	Curb Inlet Drain Filter (9” Diam. X 8 Ft. Long)	Each
C204(09)	Curb Inlet Drain Filter (6” Diam. X 6 Ft. Long)	Each

PART III - BASE AND SUBBASE COURSE

SECTION C302
BASE AND SUBBASE COURSE

C302.01 This work consists of furnishing and placing a base or subbase course on a prepared subgrade in accordance with these specifications and in close uniformity with the lines, grades, thicknesses, typical cross sections and materials shown on the plans or included herein.

Subbase under asphaltic concrete pavements and base under Portland cement concrete pavements shall be required when the natural insitu subgrade soil, as determined by soil tests, is not an A.A.S.H.T.O. A 4 or better material. When the subgrade *natural ground* is an A 4 material, the maximum liquid limit shall be twenty-five (25) and the maximum plasticity index shall be six (6), otherwise subbase material is required under asphaltic pavements and base material is required under concrete pavements.

C302.02 DEFINITIONS:

(a) A.A.S.H.T.O. American Association of State Highway and Transportation Officials unified soil classification system.

(b) Base An engineered layer of approved material placed directly below the pavement and can be one of a number of materials.

(c) Subbase An engineered layer of approved material placed below the base.

(d) Subgrade The existing insitu soil at its interface with the subbase, base or pavement.

The base and subbase courses shall be of the materials noted or specified on the approved plans and can only be changed with the approval of the Director.

C302.03 MATERIALS FOR BASE AND SUBBASE:

(a) Sand shall be natural or pumped sand with a maximum liquid limit of twenty-five (25) and a maximum plasticity index of six (6), free from trash, weeds or other foreign or deleterious material.

(b) Recycled Portland Cement Concrete: Recycled Portland Cement Concrete shall be 100 percent crushed Portland Cement Concrete and will be permitted in combination with an approved stone for base course. After being crushed, the recycled Portland Cement Concrete or the combination of stone and recycled Portland Cement Concrete shall conform to the following gradation:

U.S. SIEVE	PERCENT PASSING
1 ½"	100
1"	90-100
¾"	70-100
No. 4	35-65
No. 40	12-32
No. 200	5-12

The fraction of recycled Portland Cement Concrete passing the No. 40 sieve shall be non-plastic.

(c) Stone shall consist of 100 percent stone and shall conform to the following gradation:

U.S. SIEVE	PERCENT PASSING
1 ½"	100
1"	90-100
¾"	70-100
No. 4	35-65
No. 40	12-32
No. 200	5-12

The fraction of stone passing the No. 40 sieve shall be non-plastic.

(d) Asphaltic Concrete shall conform to the requirements of Sections C501-C509.

(e) Cold-milled Asphaltic Concrete may be used when approved by the Director.

(f) Other Base Materials may also be used when approved by the Director.

C302.04 DENSITY REQUIREMENTS:

MATERIAL	TEST	DENSITY PERCENT OPTIMUM
Sand Subbase	A.S.T.M. D698	95
Sand Base	A.S.T.M. D698	96
Crushed Concrete or Stone	La.D.O.T.D. 418E	95
Cold-milled Asphaltic Concrete	La.D.O.T.D. 418E	95

The density requirements for other material shall be in accordance with the requirements of the Director.

C302.05 TESTING: A testing program, acceptable to the Director, shall be conducted on subgrade, subbase and base under the direction of a Louisiana licensed civil engineer. Soil borings and laboratory analysis are required for the design of the roadway section. Classification and density tests are required on the subbase and base materials. The number and location of the tests are to be approved by the Director.

C302.06 The base and subbase shall be constructed so that contamination, segregation, soft spots, wet spots and other deficiencies are prevented.

C302.07 MEASUREMENT: The quantities for payment will be based on the horizontal dimensions and compacted thickness of the completed course shown on the plans, and any adjustments approved by the Director.

C302.08 PAYMENT: Payment for base course or subbase course will be made at the contract unit price per Cubic Yard (net section) including prime coat.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C302(51)	Base Course	Cubic Yard, Net Section
C302(53)	Subbase Course	Cubic Yard, Net Section

SECTION C306
SCARIFYING AND COMPACTING ROADBED

C306.01 DESCRIPTION: This work consists of scarifying, shaping, and compacting an existing roadbed to form a subbase or base course in accordance with these specifications, and in conformity with the lines, grades, depth and cross section shown on the plans or established.

C306.02 CONSTRUCTION REQUIREMENTS: Existing materials shall be scarified for the full width of roadbed and a minimum depth of 6 inches, shaped to the required section, and uniformly compacted to density requirement as specified in C302.04. Any damage to the scarified roadbed prior to compaction shall be corrected at no direct pay. The scarified, shaped and compacted roadbed shall have a smooth, uniform, closely knit surface, free from ridges, waves, depressions or loose material. The recompacted roadbed shall be primed in accordance with Section C505.

C306.03 MAINTENANCE OF COMPACTED ROADBED: The Contractor shall protect the compacted roadbed from damage due to either public traffic or construction operation and shall maintain the roadbed in satisfactory condition at all times, including the asphaltic prime coat. Any damage shall be immediately repaired by the Contractor at no direct pay.

C306.04 MEASUREMENT: The quantities of scarifying and compacting roadbed for payment will be the design lengths or areas as specified in the plans and adjustments thereto. Design quantities are based on the horizontal length of the roadbed shown on the plans. Design quantities will be adjusted when the Director makes changes to adjust to field conditions, if plan errors are proven, or when design changes are necessary.

C306.05 PAYMENT: Payment for scarifying and compacting roadbed will be made at the contract unit price, including prime coat.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C306(52)	Scarifying and Compacting Roadbed	Square Yard

PART IV - SURFACE COURSE

SECTION C402
TRAFFIC MAINTENANCE AGGREGATE

C402.01 DESCRIPTION: This work consists of furnishing and constructing aggregate surfacing for maintenance of traffic detour as directed and in accordance with the following requirements.

C402.02 MATERIALS: Aggregate for maintenance of traffic shall be crushed stone, crushed concrete, or approved equal.

C402.03 EQUIPMENT: Equipment necessary to produce a finished product meeting the specification requirements shall be furnished and maintained by the Contractor.

C402.04 CONSTRUCTION REQUIREMENTS: When directed, the Contractor shall satisfactorily place, shape, compact and maintain areas requiring traffic maintenance aggregate. When directed, the aggregate material shall be reused on the project at designated locations for traffic maintenance at no direct pay. When aggregate surfacing is no longer necessary for maintenance of traffic, the Contractor shall, unless otherwise directed, remove the aggregate surfacing and dispose of the removed materials in accordance with Section C202.

C402.06 MEASUREMENT: When directed, traffic maintenance aggregate shall be furnished and measured by the cubic yard, truck measure. Traffic maintenance aggregate for access to driveways and temporary surfacing of utility trenches will be provided and placed at no direct pay.

C402.07 PAYMENT: Payment for traffic maintenance aggregate maintained and subsequently removed (when required) will be made at the contract unit price.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C402(51)	Traffic Maintenance Aggregate	Cubic Yard (Truck Measure)

PART V - ASPHALTIC CONCRETE PAVEMENTS

SECTION C501
ASPHALTIC CONCRETE MIXTURES

C501.01 DESCRIPTION: These specifications are applicable to asphaltic concrete wearing, binder and base course mixtures of the plant mix type.

This work consists of furnishing and constructing one or more courses of asphaltic concrete mixture applied hot in conformance with these specifications and in conformity with the lines, grades, thicknesses and typical sections shown on the plans or established. The mixture shall consist of aggregates and asphalt with additives combined in proportions which meet the requirements of this Section including Table 1 and the absolute viscosity test of Subsection C503.02. Equipment and processes shall conform to Section C503.

Substitutions will be allowed for mixes without requiring a plan change as follows:

1. Wearing course of the same or higher stability for binder course.
2. Wearing or binder course for base course.
3. Higher stability for lower stability mix of the same course.

When any substitution is made, the plant requirements for the mixture used shall apply. The stability requirements of Table 1 of the mix used shall be equal to or greater than the mix originally specified.

Quality assurance requirements and design procedures shall be as specified in the latest edition of the LaDOTD's publication entitled "Application of Quality Assurance Specifications for Asphaltic Concrete Mixtures."

C501.02 MATERIALS: The Contractor shall keep accurate records, including proof of deliveries of materials for use in asphaltic concrete mixtures. Copies of these records shall be furnished to the Director upon request. Material shall conform to the following Subsections:

Asphalt (C1002.01)
Silicone and Anti-Strip Additives (C1002.02)
Aggregates (C1003.01 & C1003.06)
Hydrated Lime (LaDOTD 1018.03(a))
Mix Release Agent (LaDOTD 1018.26)

(a) Asphalt: Asphalt cement Grade AC-30 shall be used, except when mixtures contain 20% to 30% reclaimed asphaltic pavement, Grade AC-10 shall be used.

The Contractor shall reduce the amount of asphalt cement in the plant's storage or working tanks to 20% or less before adding another grade of asphalt cement or asphalt cement from another source.

(b) Additives:

(1) Silicone: Silicone additives, when needed, shall be dispersed into the asphalt by methods and in concentrations given in LaDOTD-QPL 22.

(2) Anti-Strip (AS): An anti-strip additive shall be added at the minimum rate of 0.5% by weight of asphalt and thoroughly mixed with the asphalt cement at the plant. Additional anti-strip additive shall be added up to 1.2% by weight of asphalt in accordance with Subsection C501.03(b).

(3) Hydrated Lime: Hydrated lime additive may be incorporated into all asphaltic concrete mixtures at the rate specified in the approved job mix formula. The minimum rate shall not be less than 1.5% by weight of the total mixture. Hydrated lime additive shall be added to and thoroughly mixed with aggregates in conformance with Subsection C503.02(e). Hydrated lime may be added as a mineral filler in accordance with Heading (c)(3).

(c) Aggregates: Aggregates shall meet the requirements of Table 1 and Subsection C1003.06.

(1) Recycled Portland Cement Concrete: Recycled Portland Cement Concrete will be allowed in base courses with a maximum of 70% recycled portland cement concrete by weight combined with new aggregates. Recycled concrete shall be crushed and screened into a minimum of two stockpiles composed of different sized aggregates separate from other materials at the plant. Recycled concrete shall be dried as required for new aggregates.

(2) Reclaimed Asphaltic Pavement (RAP): Reclaimed asphaltic pavement shall be stockpiled separate from other materials at the plant and will be subject to approval prior to use. Such stockpiles shall be uniform and free of soil, debris, foreign matter and other contaminants. Reclaimed materials that cannot be broken down during mixing or that adversely affect paving operations shall be screened or crushed to pass a 2-inch sieve prior to use.

(3) Mineral Filler: Mineral filler conforming to the requirements of Subsection C1003.06(10) may be used in all mixtures.

(4) Screenings: Screenings conforming to the requirements of Subsection C1003.06(6) may be used in all mixtures.

(5) Crushed Aggregates: Crushed aggregates are crusher generated materials manufactured by crushing materials which have a maximum of 10% passing the No. 4 sieve.

a. Type 3 Mixes: For Type 3 mixes, a minimum of 65% by weight of the new aggregates used in wearing and binder courses for travel lanes shall be crushed aggregates; the remaining 35% may be natural sand and mineral filler.

b. Friction Ratings for coarse aggregates shall be determined in accordance with Subsection C1003.06. The allowable usage of coarse aggregates shall be as follows.

Friction Rating	Allowable Usage
I	All mixtures
II	All mixtures
III	All mixtures
IV	All mixtures except Type 3WC

Type 3 WC (with ADT/lane greater than 1000 VPD) may use this aggregate provided a minimum of 50% by weight of the coarse aggregates in the mixture have a Friction Rating of I or II. This aggregate may also be used in mixtures for shoulders, drives, curbs, detours, etc.

C501.03 DESIGN AND QUALITY CONTROL OF MIXTURES:

(a) General: It is the intent of these specifications that the mixtures produced and placed meet the requirements for 100% payment. The Contractor shall be responsible for design, production, transportation and laydown of mixtures. Work shall meet the requirements of this Section and be subject to acceptance by the Department.

The Contractor shall exercise quality control over materials and their assembly, design, processing, production, hauling, laydown and associated equipment. Quality control is defined as the constant monitoring of equipment, materials and processes to ensure that mixtures produced and laid are uniform, are within control limits, and meet specification requirements. When these specifications are not being met and satisfactory control adjustments are not being made, operations shall be discontinued until proper adjustments and uniform operations are established. Control shall be accomplished by a program independent of, but correlated with, the Department's testing and shall ensure that the requirements of the job mix are being achieved and that necessary adjustments provide specification results.

The Contractor shall conduct such tests as necessary, in addition to the required tests, to design, control and place mixtures within specifications.

The quality of mixtures will be evaluated during two phases, mixture produced at the plant, and mixture hauled, laid and compacted. Quality of both phases will be evaluated in series of lots conforming to Subsection C501.11. A lot is a segment of continuous production of asphaltic concrete mixture from the same job mix formula produced for the Department at an individual plant. Plant quality control testing shall be conducted on each lot independent of delivery points. Project site quality control testing shall be conducted on each project for that portion of the lot placed on that project.

When the plant is in operation, the Contractor shall have a Certified Asphaltic Concrete Plant Technician at the plant that is capable of designing asphaltic concrete mixes, conducting any test or

analysis necessary to put the plant into operation and producing a mixture meeting specifications. Daily plant operations shall not begin unless the Certified Asphaltic Concrete Plant Technician is at the plant. The Asphaltic Concrete Technician certification will be awarded by the DOTD upon satisfactory completion of the DOTD's requirements.

(b) Job Mix Formula: The Contractor shall design the mixtures for optimum asphalt content and comply with requirements of DOTD TR 303, Method B; however, Method A may be used when approved. The job mix formula shall include the recommended formula and supporting design data. The recommended formula shall be submitted for approval to the Director on a properly completed Asphaltic Concrete Job Formula form. No mixture shall be produced until the proposed job mix formula has been approved.

The proposed job mix formula shall indicate a single anti-strip additive rate which is 0.1% greater than the percentage which will yield a minimum of 90% coating when tested in accordance with DOTD TR 317 or 0.1% greater than the percentage which will produce a minimum Tensile Strength Ratio (TSR) of 75% when tested in accordance with DOTD TR 322 whichever gives the greatest amount of anti-strip additive. The approved limit shall be 0.2% by weight of asphalt, with the lower limit being the quantity determined in accordance with DOTD TR 317 and the maximum limit not to exceed 1.2% by weight of asphalt.

The job mix formula shall indicate a single rate of hydrated lime additive when used. The job mix formula rate of hydrated lime additive shall not be less than 1.5% by weight of total mixture.

The job mix formula shall produce an asphaltic concrete mixture with a minimum TSR of 75% when tested in accordance with DOTD TR 322. The Contractor's proposed job mix formula shall indicate a minimum TSR value of 75% attained in accordance with DOTD TR 322 on plant-produced mixture or laboratory-produced mixture. The Department may validate the plant produced mixture, at its option. When the Department's validation result is less than 75% TSR, no further production for the job mix formula or any proposed job mix formula substituted for that mix type will be accepted on any DOTD project having DOTD TR 322 requirements until a passing plant-produced TSR value is verified by the Department. A previously validated and approved job mix formula may be produced in lieu of the disapproved job mix formula.

The job mix formula shall indicate the optimum mixing temperature which is the midpoint of the range shown on the Optimum Mixing and Compaction Temperatures Chart for the asphalt cement used. This chart shall be furnished by the Materials and Testing Section of the DOTD, or by the produce1xof the asphalt cement used. The job mix formula limits for mix temperature will be +/- 25^{o}F from the optimum mixing temperature.

When aggregates with a water absorption value greater than 2.0% determined in accordance with AASHTO T 84 for fine aggregate or AASHTO T 85 for coarse aggregate are used in the mixture, the Contractor shall increase the initial optimum asphalt cement content to compensate for the asphalt cement absorbed by the aggregates. When aggregates with an asphalt absorption value greater than 0.5%, determined in accordance with DOTD TR 320, are used in the mixture, the Contractor

shall increase the initial optimum asphalt cement content to compensate for the asphalt cement absorbed by the aggregates.

The job mix formula will allow the full range of gradation mix tolerances within the mix type specification limits.

The plant shall be operated to produce, on a continuing basis, a mixture uniformly conforming to the approved job mix formula. When this is not the case, the Contractor shall make satisfactory adjustments or cease operations. The Director may permit the Contractor to submit a new Asphaltic Concrete Job Mix Formula for approval. The Contractor shall submit a new job mix formula whenever a plant begins initial operations for the Department in a specific location or whenever a plant experiences a change in materials or source of materials. A new job mix formula will also be required whenever there are significant changes in equipment, such as the introduction of a new crusher, drum mixer, burner, etc.

(c) Control Charts: For control purposes, the Contractor shall obtain a minimum of one sample of mixture from each lot. Test results for extracted gradation (DOTD TR 309), percent crushed (DOTD TR 306) and asphalt content (DOTD TR 308) of each lot shall be plotted on control charts. The upper and lower control limits as shown on the approved job mix formula shall be included on the control chart. When the results of two consecutive extracted gradations on any sieve, except the No. 200, fall within 1% of the approved job mix formula gradation limit, or fall erratically within the range, the Contractor shall immediately make corrections to maintain the mix within the specified limits.

When the results of two consecutive extracted gradations on the No. 200 sieve fall within 0.5% of the approved job mix formula gradation limit or fall erratically within the range, the Contractor shall immediately make corrections.

(d) Reclaimed Asphaltic Pavement (RAP): The quantity of reclaimed asphaltic pavement to be used shall be designated in the job mix formula and meet the requirements of Table 1. The approved quantity shall be established after testing for absolute viscosity in accordance with Subsection C503.02(a). When mixtures contain less than 20% reclaimed asphaltic pavement, Grade AC-30 asphalt cement shall be used. Grade AC-10 asphalt cement shall be used in mixtures containing from 20% to 30% RAP. The mixture produced shall conform to the requirements for the type mixture specified. The Director may require the Contractor to reduce the percentage of reclaimed asphaltic pavement to meet acceptance criteria.

When RAP is used in the mixture, the new aggregate shall be dried and heated in a dryer to a sufficiently high temperature to produce a mixture with a minimum discharge temperature of 280^{o}F.

C501.04 WEATHER LIMITATIONS: Asphaltic concrete mixtures shall not be applied on a wet surface or when ambient temperature is below 40^{o}F, except that material in transit, or a maximum of 50 tons in a surge bin or silo used as a surge bin at the time plant operation is discontinued may be laid; however, mixture laid shall perform satisfactorily and meet specification requirements. Inclement weather will be sufficient reason to terminate or not begin production.

When base course materials are placed in plan thicknesses of 2 3/4 inches or greater, these temperature limitations shall not apply provided all other specification requirements are met.

C501.05 SURFACE PREPARATION: The surface to be covered shall be approved prior to placing mixtures. The Contractor shall maintain the surface until it is covered.

(a) Cleaning: The surface to be covered shall be swept clean of dust, dirt, caked clay, caked material and loose material by revolving brooms or other mechanical sweepers supplemented with hand equipment as directed. When mixtures are to be placed on portland cement concrete pavement or overlaid portland cement concrete, the Contractor shall remove excess joint filler from the surface by an approved burning method. The Contractor shall remove any existing raised pavement markers prior to asphaltic concrete overlay operations.

When brooming does not adequately clean the surface, the Contractor shall wash the surface with water in addition to brooming to clean the surface.

When liquid asphalt is exposed to traffic for more than 2 calendar days, becomes contaminated, or degrades due to inclement weather, the liquid asphalt shall be reapplied at the initial recommended rate at no direct pay.

(b) Applying Liquid Asphaltic Materials:

(1) Existing Pavement Surfaces: Before constructing each course, an approved asphaltic tack coat shall be applied in accordance with Section C504. The Contractor shall protect the tack coat and spot patch as required.

(2) Raw Aggregate Base Course and Raw Embankment Surfaces: The Contractor shall apply an approved asphaltic prime coat to unprimed surfaces, or protect in-place prime coat and spot patch as required with asphaltic prime coat, in accordance with Section C505.

(3) Cement and Lime Stabilized or Treated Embankment and Base Course Surfaces: The Contractor shall apply an approved asphaltic curing membrane when none is in place, or protect the in-place curing membrane and spot patch, as required, with asphaltic material in accordance with Section 506.

(4) Other Surfaces: Contact surfaces of curbs, gutters, manholes, edges of longitudinal and transverse joints, and other structures shall be covered with a uniform coating of an approved asphaltic tack coat conforming to Section C504 before placing asphalt mixtures.

C501.06 JOINT CONSTRUCTION:

(a) Longitudinal Joints: Longitudinal joints shall be constructed by setting the screed to allow approximately 25% fluff and also overlapping the paver approximately 2 inches onto the adjacent pass. Prior to rolling, the overlapped mix shall be pushed back to the uncompacted side, without scattering loose material over the uncompacted mat, to form a vertical edge above the joint. The vertical edge shall then be compacted by rolling to form a smooth, sealed joint. Longitudinal joints in one layer shall offset those in the layer below by a minimum of 3 inches; however, the joint in the top layer shall be offset 3 inches to 6 inches from the centerline of pavement when the roadway comprises two lanes of width, or offset 3 inches to 6 inches from lane lines when the roadway is more than two lanes. The narrow strip shall be constructed first.

Where adjacent paving strips are to be placed, the longitudinal edge joint of the existing strip shall be tacked.

(b) Transverse Joints: Transverse joints shall be butt joints formed by cutting back on the previously placed mixture to expose the full depth of the lift. An approved 10-foot static straightedge shall be used to identify the location at which the previously placed mixture is to be cut back to maintain no greater than a 1/8 inch deviation in grade. The cut face of the previously placed mat shall be lightly tacked before fresh material is placed. The screed shall rest on shims that are approximately 25% of plan thickness placed on the compacted mat or the screed shall be set at a distance that is 25% of plan thickness above the mat surface. Transverse joints shall be formed by an adequate crew. Transverse joints shall be checked by the Director for surface tolerance using a stringline extended from a point 10 feet before the joint to a point approximately 40 feet beyond the joint. Any deviation in grade from the stringline in excess of 3/16 inch for roadway wearing courses and 1/4 inch for other courses shall be immediately corrected prior to the paving operation continuing beyond 100 feet of the transverse joint. Additionally, the transverse joint shall meet the surface tolerance requirements of Table 1. The Contractor shall make necessary corrections to the joint before continuing placement operations.

Transverse joints in succeeding lifts shall be offset at least 2 feet.

(c) Sawing and sealing of joint in an asphaltic concrete overlay: When new concrete pavement or existing concrete foundation is to be overlaid with asphaltic concrete, joints shall be sawed or formed and sealed.

Saw cut shall be made in the overlay at the locations of all transverse and longitudinal joints in the concrete pavement. The sawed joints will have a minimum of 1/8" wide by 1" deep. Cleaning and drying the saw cut before applying hot poured sealant as specified in Subsection C601.04(g).

Sawing and sealing of joints in an asphaltic concrete overlay will be made at no direct pay.

C501.07 HAULING, PAVING AND FINISHING: Mixtures shall be transported from the plant and delivered to the paver at a temperature no cooler than 25^{o}F below the lower limit of the approved job mix formula. The temperature of the mix going through the paver shall not be cooler than 250^{o}F.

No loads shall be sent out so late in the day that completion of spreading and compaction of the mixture cannot be completed during daylight, unless artificial lighting has been approved.

When segregation occurs, haul trucks shall be loaded with a minimum of three drops of mix, the last of which shall be in the middle.

Each lift of asphaltic mixture shall be placed in accordance with the specified lift thickness. When no lift thickness is specified, binder and wearing course mixtures shall be placed in lifts not exceeding 2 inches plan thickness. Base course mixtures shall be placed in lifts of such thickness that all specification requirements are met.

With the Director's approval, motor patrols may be used to fill isolated depressions in the initial layer, provided this construction does not result in unsatisfactory subsequent lifts.

(a) Coordination of Production: The Contractor shall coordinate and manage plant production, transportation of mix and placement operations to achieve a high quality pavement and shall have sufficient hauling vehicles to ensure continuous plant and roadway operations. The Director will order a halt to operations when sufficient hauling vehicles are not available.

On final wearing course construction under traffic with pavement layers of 2 inches compacted thickness or less, the Contractor will be permitted to pave one travel lane for a full day. The Contractor shall pave the adjacent lane the next work day. When the adjacent travel lane is not paved the next calendar day and the longitudinal joint is exposed to traffic for more than 3 calendar days, the entire length of exposed longitudinal joint shall be cut back to plan thickness to a vertical edge and heavily tacked. When pavement layers are greater than 2 inches compacted thickness, the Contractor shall place approximately 1/2 of each day's production in one lane and the remainder in the adjacent lane.

Pavement shall be protected from traffic until it has sufficiently hardened to the extent the surface is not damaged.

(b) Paving Operations: All mixtures shall flow through the paver hopper. Mixtures dropped in front of the paver shall be either lifted into the hopper or rejected and cast aside. Delivery of material to the paver shall be at a uniform rate and in an amount within the capacity of paving and compacting equipment. The paver speed and number of trucks shall be adjusted to have one truck waiting in addition to the one at the paver in order to maintain continuous paving operations. The height of material in front of the screed shall remain uniform.

Transfer of mixture from haul truck to paver may be made by direct unloading into the paver hopper or by use of approved mechanical transfer devices to transfer mix from a haul truck or windrow. During mixture transfer, the paver shall not be jarred or moved out of alignment. During truck exchanges the level of mix in the paver hopper shall not drop so low as to expose the hopper feed slats.

Pavers shall be designed and operated to place mixtures to required line, grade and surface tolerance without resorting to hand finishing.

Longitudinal joints and edges shall be constructed along lines established. An acceptable method of longitudinal control shall be placed by the Contractor for the paver to follow. The paver shall be positioned and operated to closely follow the established line. Irregularities in alignment shall be corrected by trimming or filling directly behind the paver.

After each load of material has been placed, the texture of the unrolled surface shall be checked to determine its uniformity. The adjustment of screed, tamping bars, feed screws, hopper feed, etc., shall be checked frequently and adjusted as required to assure uniform spreading of the mix to proper line and grade and adequate compaction. When segregation of materials or other deficiencies occur, paving operations shall be suspended until the cause is determined and corrected.

Surface irregularities shall be corrected directly behind the paver. Excess material forming high spots shall be removed. Indented areas shall be filled and finished smooth. Hand placement in

accordance with Heading (c) for surface repair will be permitted. Material shall not be cast over the surface.

When paving and finishing operations are interrupted so that the mixture remaining in trucks, paver, paver hopper or on the pavement cools to such extent that it cannot be placed, finished or compacted to the same degree of smoothness and with the same texture and density as the uncooled mixture, the cooled mixture shall be removed and replaced at no direct pay.

When additional mix is required to increase superelevation in curves, the use of automatic slope control will be optional with the Contractor.

(c) Hand Placement: When the use of mechanical finishing equipment is not practical, the mix may be placed and finished by hand to the satisfaction of the Director. No casting will be allowed including casting the mixture from the truck to the grade. During paving operations material shall be thoroughly loosened and uniformly distributed. Material that has formed into lumps and does not break down readily will be rejected. The surface shall be checked before rolling and irregularities corrected.

C501.08 COMPACTION:

(a) General: After placement, mixtures shall be uniformly compacted by rolling while still hot, to at least the density specified in Table 1. If continuous roller operation is discontinued, rollers shall be removed to cooler areas of the mat, where they will not leave surface indentations. The use of steel wheel rollers which result in excessive crushing of aggregate will not be permitted.

The rolling pattern established by the Contractor shall be conducted by experienced operators in consistent sequences and by uniform methods that will obtain specified density and smoothness. Individual roller passes shall uniformly overlap preceding passes to ensure complete coverage of the paving area. The speed and operation of rollers shall not displace, tear or crack the mat. Non-vibrating steel wheel rollers shall be operated with drive wheels toward the paver. Any operations causing displacement, tearing or cracking of the mat shall be immediately corrected.

Equipment which leaves tracks or indented areas which cannot be corrected in normal operations or fails to produce a satisfactory surface shall not be used. Operation of equipment resulting in accumulation of material and subsequent shedding of accumulated material into the mixture or onto the mat will not be permitted.

To prevent adhesion of mixture, wheels of steel wheel rollers shall be kept properly moistened, but excess water will not be permitted.

Vibratory rollers may be used provided they do not impair the stability of the pavement structure or underlying layers.

The surface of mixtures after compaction shall be smooth and true to cross slope and grade within the tolerances specified. Mixtures that become loose, broken, contaminated or otherwise defective shall be removed and replaced with fresh hot mixture compacted to conform with the surrounding mixture.

Ripples in the mat surface will not be accepted. Lots with rippled areas will be subject to rideability testing by the Department. These areas will be compared with the balance of the lot and adjacent acceptable riding surfaces to determine acceptability. Areas identified by such testing as unacceptable shall be corrected at no direct pay. Damage to the longitudinal joint shall be minimized to conform to Subsection C501.07(a).

(b) Breakdown Rolling: Breakdown or initial rolling shall be accomplished with a static or vibratory steel-wheel roller designed for initial compaction of hot asphaltic concrete mixtures conforming to Subsection C503.06.

(c) Finish Rolling: Finish rolling shall be accomplished with an approved nonvibrating steel wheel roller conforming to Subsection C503.06 until roller marks have been eliminated.

After finish rolling, newly finished pavements shall have a uniform, tightly-knit surface free of cracks, tears or other deficiencies. Deficiencies shall be corrected at no direct pay and the Contractor shall adjust operations to correct the problem. This may require the Contractor to adjust the mix or furnish additional or different equipment.

(d) Hand Compaction: Along forms, curbs, headers, walls and at other places inaccessible to rollers, mixture shall be uniformly compacted to the satisfaction of the Director with approved hand tampers or mechanical tampers, conforming to Subsection C503.07.

C501.09 PAVEMENT SAMPLES: Samples shall be cores approximately 4" in diameter taken by an approved core drill. The Contractor shall furnish samples cut from the completed work. The removed pavement shall be replaced with hot or cold mixture and refinished during the work day coring is performed. No additional compensation will be allowed for furnishing test samples and replacing the areas with new pavement. Samples shall be taken by the Contractor in the presence of the Director's representative from areas selected by the Director in accordance with Subsection C501.11(b)(2)c. When the design thickness is greater than 1-3/8", cores less than 1-3/8" thick shall not be used as pavement samples for payment determination.

Cores shall be transported to the plant in approved transport containers or one-gallon friction-top cans. Regardless of transport container used, the container will be sealed, signed, and dated by the inspector using an approved method. The individually wrapped core will also be sealed, signed, and dated by the inspector using an approved method. Any evidence of tampering with the core wrappings, sticker, or of opening the container or friction-top can will result in the cores being rejected. Additional pavement samples will be required.

C501.10 DIMENSIONAL REQUIREMENTS: Mixtures that are specified for payment on a cubic yard or square yard basis shall conform to the following dimensional requirements. Overthickness and overwidth will be waived at no direct pay.

When grade adjustments are permitted for all mixtures except the final wearing course, areas with underthickness in excess of 1/4" shall be corrected to plan thickness at no direct pay by furnishing and placing additional mixture in accordance with Subsection 501.10(e). For the final wearing course, areas with underthickness in excess of the 1/4" shall be corrected to plan thickness at no direct pay by furnishing and placing a supplemental layer of wearing course mixture meeting

specification requirements in accordance with Subsection 501.10(e) over the entire area for the full width of the roadway when grade adjustments are permitted.

When grade adjustments do not permit, the deficient overthickness area shall be removed and replaced at no direct pay.

(b) Width: The width of completed courses will be determined in accordance with DOTD TR-602. Underwidths shall be corrected by furnishing and placing additional mixture a minimum of 1 foot wide and plan thickness at no direct pay.

C501.11 ACCEPTANCE REQUIREMENTS: All Department inspection procedures, including sampling and testing, form the basis for acceptance of the asphaltic concrete. Any section of pavement that is obviously deficient shall be satisfactorily corrected or replaced. Sampling and testing shall be accomplished following a stratified sampling plan in accordance with the Materials Sampling Manual and specified test procedures. Times and locations shall be established by the Director.

A standard lot is the production of asphaltic concrete mix from the same job mix formula produced for the Department at an individual plant in one day. Additional adjustments may be made to the standard lot size as specified in this Subsection. Minor adjustments will be made to the lot size to accommodate hauling unit capacity.

Acceptance testing for Marshall properties, percent anti-strip additive, percent hydrated lime (when used), quality of asphalt cement, aggregate gradation, percent crushed aggregate, percent asphalt cement, and percent moisture in loose mix will be conducted on the total lot quantity. Acceptance testing for pavement density, surface tolerance and dimensional tolerances will be conducted on that portion of the lot placed on each contract.

Pavement density and surface tolerance requirements will not be applied for short irregular sections, such as drives, aprons and turnouts; however, mix shall be placed to provide a neat, uniform appearance and shall be compacted by satisfactory methods.

For projects, or separate locations within a project, requiring over 100 tons of mixture, one sample will be taken for Marshall properties testing for each 250 tons or portion thereof produced. Sampling and testing for aggregate gradation, asphalt content and percent crushed shall be in accordance with Heading (b)(2)b. Five samples shall be taken for determination of pavement density, with the sampling distribution to be determined by the Director.

For projects, or separate locations within a project, requiring less than 100 tons, the job mix formula, materials, and plant and paving operations shall be satisfactory to the Director. Payment adjustments for Marshall properties will be based on "Individual Test Within Lot" values in Table 2. Sampling and testing requirements for aggregate gradation, surface tolerance and pavement density may be modified by the Director and the payment adjustment for deviations waived.

(a) Inspection: Mix exhibiting deficiencies before placement such as segregation, contamination, lumps, nonuniform coating, excessive temperature variations in surface texture and appearance or other deficiencies, apparent on visual inspection, will not be accepted. Poor

construction practices such as handwork, improper truck exchanges, improper joint construction, or other deficiencies, apparent on visual inspection, will not be accepted.

Deficiencies revealed by visual inspection after placement and before final acceptance shall be corrected at no direct pay.

When requested by the Contractor, the acceptability of mixtures or work rejected by visual inspection will be evaluated by tests and measurements.

(b) Sampling and Testing:

(1) Without Payment Adjustments: The Department will take samples or perform tests as outlined in these specifications to ensure that the asphaltic concrete conforms to Department standards, which include job mix limits, typical sections, material properties, surface deviations and verification of control testing. The Department will perform tests for gradation, percent crushed, percent asphalt cement, and Marshall properties to determine the acceptability of the asphaltic concrete without payment adjustment. Deviations from specified tolerances will not be accepted. When a sample or test indicates a deviation from a specified tolerance, the Contractor shall take immediate corrective action, or operations shall be discontinued.

(2) With Payment Adjustments: When the mix does not meet requirements in the areas listed in this Section, the Payment Adjustment Schedules shown in Table 2 will be applied. Production of mix that is not eligible for 100% will not be allowed on a continuous basis. When test results demonstrate that payment adjustments are necessary, satisfactory control adjustments shall be made, or production shall be discontinued.

The Department will pay the Contractor at an adjusted rate as specified in Table 2 for tests conducted by the Department on samples obtained from each lot of material, in accordance with the following Headings. In addition a payment adjustment will be applied for the use of asphalt cement which does not meet specifications.

a. Marshall Stability: Testing for Marshall Stability will be conducted by the Director. Compacted specimens of mixture shall conform to the properties in Table 1 when tested in accordance with DOTD TR 305 for both an individual and an average of four samples taken from each lot after the mixture is placed in trucks. One sample will be taken from each of four sublots. Temperature at the time of molding specimens shall be within 15^{o}F of mix temperature at the time of sampling. When an individual test or the average of tests representing the lot is outside acceptance limits shown in Table 1, an adjustment in unit price for the lot will be made in accordance with Table 2.

b. Aggregate Gradation, Asphalt Content and Percent Crushed: Sampling and testing for aggregate gradation, asphalt content and percent crushed will be conducted by the Director. One loose mix sample, representing one/half day of production from an individual plant, randomly spaced throughout the production of each one/half day of production, will be taken after placement of the mix in the truck. These samples shall be tested at the plant laboratory in accordance with DOTD TR 309, TR 307 and TR 306, respectively. If the test results are within the job mix control limits given in Table 1, no payment adjustment will be made. When test results from the sample are outside the job mix control limits, the

Contractor's Certified Plant Technician will make immediate adjustments to maintain the mix within specified limits.

c. Pavement Density: Acceptance testing for pavement density will be conducted by the Director. Upon completion of compaction, five pavement samples per contract shall be obtained in accordance with Subsection C501.09 from each lot within 24 hours after placement of the lot. When this falls on a day the Contractor's crews are not working, sampling shall be done within 3 calendar days. The lot will be divided into five sublots of approximately equal length. One sample shall be obtained from each sublot. The number of samples representing a lot will not be less than five. The density requirement for the average of five samples will be as shown in Table 1 determined in accordance with DOTD TR 304. Payment will be made in accordance with Table 2.

When the sampling location determined by random sampling falls within areas that are to be replaced or within 1 foot of the pavement edge, another random sampling location will be used.

d. Longitudinal Surface Tolerance: Testing for surface tolerance will be required for each lot on the final roadway wearing course lift. Testing will be the responsibility of the Director. The surface will be tested with a ten (10') foot rolling straightedge in the longitudinal direction of the pavement before completion of the project. The rolling straightedge will be furnished by the Contractor and shall be recently calibrated. Surface corrections shall be made in accordance with subsection 3 below. The requirements for longitudinal surface tolerance on the final roadway wearing course lift shall be:

1. Longitudinal Surface Finish: One path in each lane of the finished surface will be selected at random. Intersections, driveways, drainage structures, bus pads or other roadway obstructions, shall be eliminated from the path of the straightedge.

2. Longitudinal variations: Longitudinal variations in the roadway wearing course surface will be subject to provisions of this section. Surface-finish deficiencies exceeding three-eighths (3/8") inch for more than 10% percent of the lot, shall be corrected in accordance with subsection 3 below. After corrections have been made, the entire lot will be subject to the provisions of this section.

3. Correction of Deficient Areas: Deficiencies to be corrected in the final wearing course shall be corrected by milling, removing and replacing or furnishing and placing a supplemental layer of wearing course mixture at least 2" thick for the full width of the roadway; all in a manner satisfactory to the Director and at no additional cost to the City.

e. Anti-Strip Additive: Testing for addition of anti-strip additive will be conducted at a frequency of twice per lot. When anti-strip additive is not added within the range given on the approved job mix formula, an adjustment in unit price will be made in accordance with Table 2. The payment adjustment required will be on the averaged whole percent payment for the lot. The lot will be divided into two approximately equal sublots. The percent pay will be adjusted for each sublot, then averaged to determine the payment adjustment for the lot.

C501.12 GEOTEXTILE FABRIC FOR PAVING (FOR CONCRETE WEARING COURSE ON PORTLAND CEMENT CONCRETE BASE):

(a) DESCRIPTION. Work shall include furnishing and placing the specified geotextile fabric on the pavement prior to installing the asphalt wearing course.

(b) MATERIALS. The geotextile fabric shall be nonwoven fabric and meet the following minimum requirements:

Tensile Strength (ASTM D-1682)	110 lbs (in either direction)
Elongation (ASTM D-1682)	55% (in either direction)
Melting point	320^{o}F
Asphalt Retention	0.20 gal/sy

(c) CONSTRUCTION REQUIREMENTS:

(1) The pavement should be free from dirt, water, oil and foreign material. Cracks wider than 3/8" should be filled as specified in subsection C724.09.

(2) Prior to installation of the geotextile fabric a tack coat must be applied at the rate recommended by the manufacturer.

(3) The geotextile fabric shall be delivered in rolls to facilitate installation.

(4) During shipment and storage the geotextile fabric shall be wrapped in a heavy-duty covering to protect it from direct sunlight, ultraviolet rays, temperatures greater than 140^{o}F (60^{o}C), mud, dirt, dust, debris and abrasion.

(5) The manufacturer shall furnish a sample and certified test reports showing that the geotextile fabric meets the requirements of these subsections.

(6) Unless otherwise specified by the manufacturer the geotextile fabric shall be unrolled directly on top of the pavement in a uniform manner, free of wrinkles, and all sections overlapped by two (2') feet. Tears or rips in the fabric shall be patched.

C501.13 MEASUREMENT: Asphaltic tack coat, prime coat or curing membrane will not be measured for payment.

(a) Weight Measurement: Asphaltic concrete will be measured by the ton of 2,000 pounds from printed weights as provided in Section C503. Stamped printer tickets will be issued for each truckload of material delivered. Material lost, wasted, rejected or applied contrary to specifications will not be measured for payment.

Estimated quantities of asphaltic concrete shown on the plans are based on 110 lb/sq yd/inch thickness.

(b) Volume or Area Measurement: The quantities for payment will be the design quantities specified in the plans and adjustments thereto. Design quantities will be adjusted when the Director makes changes to adjust to field conditions or when design changes are necessary. Design quantities are based on the horizontal dimensions and compacted thickness of the completed course shown on the plans.

(c) Geotextile: Geotextile fabric shall be measured by the square yard, based on the theoretical area on the plans. Fabric used in patching or overlaps shall not be measured for payment.

C501.14 PAYMENT: Payment for asphaltic concrete will be made at the contract unit price on a lot basis. When the mix does not conform to acceptance requirements, payment will be made at an adjusted price per unit of measurement in accordance with Section C1002 and Table 2. The Director will provide adjustment percentage for properties of asphaltic materials.

(a) General: Payment for asphaltic concrete will include furnishing all required materials, producing the mixtures, preparing the surfaces on which the mixtures are placed, hauling the mixtures to the work site, and placing and compacting the mixtures.

(b) Wearing Course Mixes: The lowest percentage of contract price will be used for final adjustment in unit price for deficiencies in Marshall Stability, pavement density, surface tolerance, anti-strip additive, and asphalt cement properties.

(c) Base, Binder and Shoulder Mixes: The lowest percentage of contract price will be used for final adjustment in unit price for deficiencies in Marshall Stability, pavement density, anti-strip additive, and asphalt cement properties.

(d) Geotextile: Geotextile fabric will be paid for per square yard at the contract unit price which includes furnishing equipment, labor and materials to complete the item.

Payment will be made under:

ITEM NO.	**PAY ITEM**	**Pay Unit**
C501(51)	Asphaltic Concrete	Ton
C501(52)	Asphaltic Concrete	Cubic Yard
C501(53)	Asphaltic Concrete (___" Thick)	Square Yard
C501(54)	Geotextile Fabric for Paving	Square Yard

TABLE 1

REQUIREMENTS FOR ASPHALTIC CONCRETE MIXTURES

A. Mixture Requirements

U. S. Sieve % Passing	Type 3 Wearing Course	Binder Course	Type 5A Base	Mix Tolerance
1-1/2"	------	------	100	-----
1"	100	100	80 - 100	± 6
3/4"	95 - 100	85 - 100	------	± 6
1/2"	85 - 100	70 - 100	------	± 6
3/8"	70 - 100	60 - 95	------	± 6
No. 4	50 - 75	40 - 70	35 - 70	± 6
No. 10	28 - 55	28 - 50	------	± 6
No. 40	14 - 30	14 - 30	16 - 40	± 5
No. 80	8 - 20	8 - 20	------	± 4
No. 200[4]	3.0 - 8.0	3.0 - 8.0	3.0 - 8.0	± 2.0
Extracted Asphalt, %	------	------	------	± 0.4
Mix Temperature	------	------	------	± 25°F
% Cursched, Min.	85	70	As Needed	------
Aggregates[1] (Grade)	A,B,C	A,B,C,I	A,B,C,D,G,H,I	------
Marshall Stability, lbs.				
No. of Blows	75	75	75	------
Design[2]	1700	1700	1400	------
Minimum	1500	1500	1200	------
Individual	1300	1300	1000	------
Marshall Flow,	1/100 in. 6 - 15	5 - 15	15 Max	------
% Voids	3.0 - 5.0	3.0 - 5.0	3.0-5.0	------
% VFA	70 - 80	70 - 80	70-80	------
% VMA Min[3]	14.5	14.0	13.0	------
% RAP, Max.	0.0	30.0	30.0	------

B. Pavement Requirements

Density, %:

Pavement Wearing & Binder Courses - 95.0

Base Course - 94.0

Grade Tolerance Variation, Inches:

Roadway Wearing Courses - 1/2

Binder Courses - ½

1 A - Gravel, B - Slag, C - Stone approved for wearing surface, D - Stone, G - Sand Gravel, H - Recycled portland cement concrete, I - Reclaimed asphaltic pavement. See Subsection C501.02(c).

2 The Contractor shall design a mixture at a stability value based on historical plant performance that will ensure compliance with 100 percent payment requirements for the average of four samples. Values listed may be used as guide.

3 For Design Guideline. For mixes with a theroetical gravity greater than 2.47, a tolerance of minus 1.0 percent will be applied to tthe minimum VMA.

4 Max of 6.5 percent passing the No. 200 sieve for design of all mixtures.

TABLE 2
PAYMENT ADJUSTMENT SCHEDULES

	Percent of Contract Unit Price/Lot[1]				
	100	98	95	80	50 or Remove [2]
Marshall Stability (lb):					
. Type 3 WC & BC:					
Lot (Average)	1500 & Above	------	1400 - 1499	1250 - 1399	Below 1250
Individual Test Within Lot	1300 & Above	Below 1300	------	------	------
. Type 5A Base:					
Lot (Average)	1200 & Above	------	1100 - 1199	1000 - 1099	Below 1000
Individual Test Within Lot	1000 & Above	Below 1000	------	------	------
Pavement Density: (% of Laboratory Density)					
95.0	95.0 & Above	------	94.0 - 94.9	92.0 - 92.9	Below 92.0
94.0	94.0 & Above	------	93.0 - 93.9	91.0 - 92.9	Below 91.0
Anti-Strip Addictive, % Below Job Mix Formula	Within Job Mix Formula	0.2 or less	More than 0.2	------	------

[1] Portion of lot placed on the project

[2] At the option of the Director

SECTION C502
SUPERPAVE ASPHALTIC CONCRETE MIXTURES

502.01 Description: These specifications are applicable to Superpave Asphaltic Concrete wearing, binder and base course mixtures of the plant mix type.

All references herein shall conform to the LaDOTD Louisiana Standard Specifications for Roads and Bridges, Latest Edition, Section 502, and latest revisions thereto. Section 502 shall govern except as amended herein. All references to the "department" and to "the Director" shall mean the City's representative in these specifications. Wearing Courses shall be (1/2" Nominal Size) and Binder and Base Courses shall be (3/4' or 1" Nominal Size and conforming to the Lift Thickness shown in Table 502-3). The use of a Material Transfer Device is not allowed unless receiving written approval from the Director.

502.02 Materials: See Latest Edition of the LaDOTD Louisiana Standard Specifications for Roads and Bridges, including revisions thereto, except as modified herein.

(a) Asphalt Cement: The asphalt cement grades used shall be as specified in Table C502-1.

Table C502-1
Superpave Asphalt Cement Usage

Current Traffic Load Level	Mixture Type[1]	Grade of Asphalt Cement
Level A	Incidental Wearing Course	PG64-22
Level 1	Binder and Wearing Course	PG64-22
	Base Course	PG64-22*

[1] Nominal Aggregate Size must conform to the Lift Thickness requirements listed in Table C502-3 for each lift of asphalt.
* Binder and Base Course containing between 20 and 30 percent RAP shall use PG58-28. All Wearing Courses shall use PG64-22.

502.04 Job Mix Formula: Validation will be based on the first lot test results. All the specification criteria must be met for production to continue.

502.05 Plant Quality Control: This section does not apply to these specifications.

502.06 Plant Acceptance: This section does not apply to these specifications.

502.10 Roadway Quality Control: See Latest Edition of the LaDOTD Louisiana Standard Specifications including revisions thereto, except as modified herein. All references to Surface Tolerance and IRI specifications will not apply to these specifications.

502.11 Roadway Acceptance: See Latest Edition of the LaDOTD Louisiana Standard Specifications including revisions thereto, except as modified herein.

Density: Acceptance testing for pavement density will be conducted by the Director. One pavement core for each mix use shall be taken from each sublot within 72 hours after placement. Sampling shall be performed by the Director using the random number tables shown in DOTD TR 605. When the sampling location determined by random sampling falls within areas that are to be replaced, within 1 foot of the pavement edge, or within 5 feet of a transverse joint; another

sampling location will be determined. Samples will be drilled by the Contractor at the locations determined by the Director. The Director shall transport the cores to the asphalt plant for testing by the Director's representative. The Contractor's representative will inspect the cores upon delivery to the plant and before any testing is performed on the core. Any damaged cores or cores that are less than 1 3/8"; can be rejected at that time and a new sampling location must be determined and the core re-drilled. The removed pavement shall be replaced with hot or cold mixture and refinished during the work day the coring is performed. Cores less than 1 3/8" thick shall not be used as pavement samples for payment determination. The average density of all cores for each lot shall be greater than 92% of Maximum Theoretical Gravity (TR 327). Roadway density will be calculated using the lot average for Maximum Theoretical Gravity.

502.13 Quality Level Analysis: This section does not apply to these specifications.

502.14 Lot Sizes: This section has been modified as follows:

A lot is a segment of continuous production of asphaltic concrete mixture from the same job mix formula produced for a given job at an individual plant. A standard lot will be defined as:

- 2000 tons production
- Partial lots will require testing at the frequency of one test per 500 tons, and portion thereof.

Each lot will be sub-divided into four equal sublots based on expected production. Testing will be conducted as follows:

- First Sublot –
  - Tests will be performed on aged specimens compacted to N-design as follows:
    - Percent Voids
    - Percent VFA
    - Percent VMA
  - Theoretical Maximum Specific Gravity (Gmm)
  - Gradation, AC Content and Percent Crushed
  - Aged or un-aged specimens compacted to N-maximum as follows:
    - Percent Gmm at N-initial
    - Percent Gmm at N-Maximum
- Second Sublot –
  - Theoretical Maximum Specific Gravity (Gmm)
  - Aged or un-aged specimens compacted to N-maximum as follows:
    - Percent Gmm at N-initial
    - Percent Gmm at N-Maximum
- Third Sublot –
  - Tests will be performed on aged specimens compacted to N-design as follows:
    - Percent Voids
    - Percent VFA
    - Percent VMA
  - Theoretical Maximum Specific Gravity (Gmm)
  - Gradation, AC Content and Percent Crushed
  - Aged or un-aged specimens compacted to N-maximum as follows:
    - Percent Gmm at N-initial
    - Percent Gmm at N-Maximum

- Fourth Sublot –
    - Theoretical Maximum Specific Gravity (Gmm)
    - Aged or un-aged specimens compacted to N-maximum as follows:
        - Percent Gmm at N-initial
        - Percent Gmm at N-Maximum

Tests for Theoretical Maximum Specific Gravity, Voids, VMA and VFA shall be conducted by the Director. If lot averages (minimum two samples) exceed tolerances listed in Table C502-3, an adjustment must be made to the mix by the Contractor to bring the mix back within tolerance. If two consecutive lots are out on the same parameter, production must be halted and the mix re-designed.

Tests for Gradation, AC Content, and Percent Crushed and for aged or un-aged specimens compacted to N-maximum shall be conducted by the Contractor's Quality Control representative. If lot averages (minimum two samples) exceed tolerances listed in Table C502-2, an adjustment must be made to the mix by the Contractor to bring the mix back within tolerance. If two consecutive lots are out on the same parameter, production must be halted and the mix re-designed.

502.15 Measurement: See latest Edition of the LaDOTD Louisiana Standard Specifications for Roads and Bridges, including revisions thereto, except as modified herein.

(a) Weight Measurement: Asphaltic concrete will be measured by the ton of 2,000 pounds (megagrams) from printed weights as provided in Section 503. Stamped printer tickets will be issued for each truckload of material delivered. Material lost, wasted, rejected or applied contrary to specifications will not be measured for payment.

Estimated quantities of asphaltic concrete shown on the plans are based on 110 lb/sq yd/inch (2.35 kg/sq m/mm) thickness.

(b) Volume or Area Measurement: The quantities for payment will be the design quantities specified in the plans and adjustments thereto. Design quantities will be adjusted when the Director makes changes to adjust to filed conditions or when design changes are necessary. Design quantities are based on the horizontal dimensions and compacted thickness of the complete course shown on the plans.

(c) Surface Tolerance Incentive Measurement: This Standard Specification section does not apply to this project.

502.16 Payment: Payment shall be made based on the measurement specified and adjusted for % Air Voids and Average Roadway Density in accordance with Table C502-4 included herein.

Payment will be made under:

ITEM NO.	PAY ITEM	Pay Unit
C502(51)	Superpave Asphaltic Concrete	Ton
C502(52)	Superpave Asphaltic Concrete	Cubic Yard
C502(53)	Superpave Asphaltic Concrete (__" Thick)	Square Yard

Table C502-2

Superpave Requirements

A. REQUIREMENTS FOR EXTRACTED ASPHALT CEMENT AND AGGREGATE GRADATION					
U.S. (Metric) Sieve Passing	1/2 inch (12.5 mm) Nominal	3/4 inch (19 mm) Nominal	1 inch (25 mm) Nominal		Mix Tolerance[1]
2 inch (50 mm)	---	---	---		±6
1 1/2 inch (37.5 mm)	---	---	100		±6
1 inch (25 mm)	---	100	90-100		±6
3/4 inch (19 mm)	100	90-100	89 Max		±6
1/2 inch (12.5 mm)	90-100	89 Max	---		±6
3/8 inch (9.5 mm)	89 Max.	---	---		±6
No. 4 (4.75 mm)	---	---	---		±6
No. 8 (2.36 mm)	28-58	23-49	19-45		±5
No. 16 (1.18 mm)	---	---	---		±4
No. 30 (600 µm)	---	---	---		±3
No. 50 (300 µm)	---	---	---		±3
No 100 (150 µm)	---	---	---		±2
No. 200 (75 µm)	2.0-10.0	2.0-8.0	1.0-7.0		±1.5
Extracted Asphalt, %	---	---	---		±0.4
Mix Temperature	---	---	---		±25°F (±14°C)
Aggregate[2]	A,B,C	A,B,C	A,B,C,D,E		---
B. PAVEMENT REQUIREMENTS					
Density, Min. 92.0 (% of Maximum Theoretical Gravity) Roadway Travel Lane Wearing, Binder and Base Courses					
Density, Min. 89.0 (% of Maximum Theoretical Gravity) Shoulders, Patching and Widening					

[1] Job Mix Formula based on validated mix design. Tolerances apply only to Lot average (2 samples minimum).

[2] A - Gravel, B - Slag, C - Stone approved for wearing surface, D - Stone, E - Reclaimed Asphaltic Pavement. See Subsection 502.02(c).

Table C502-3
Superpave Mixture Criteria

Nominal Max., Size Agg.	0.5 inch (12.5 mm)		0.75 inch (19 mm)		1.0 inch (25 mm)		
Type of Mix	Incidental Paving	Wearing Course	Binder Course		Binder Course	Base Course	
Level	A	1	1		1	1	
Asphalt Binder	Table C502-1						
Coarse Agg. Angularity, + No. 4 (4.75 mm)	55	75	75		75	75	
Fine Agg. Angularity, Min. % - No. 4 (4.75 mm)	40	40	40		40	40	
Flat and Elongated Particles, % Max. (5:1) + No. 4 (4.75 mm)	10						
Sand Equivalent, Min. % (Fine Agg.), - No. 4 (4.75 mm)	40	40	40		40	40	
Natural Sand Max. % of New Agg.	N/A	15	15		15	15	
RAP, Max. % of Mix[1]	20	20	30		30	30	
Compacted Mix Volumetrics							
VMA, Min. %	13	13	12		11	11	
Air Voids, %	2.5-4.5						
VFA, %	68-78						
$N_{initial}$ 91% max. (Gyrations)	7	7	7		7	7	
N_{design} 96.5±1.5 % (Gyrations)	75	75	75		75	75	
N_{max} 98 % max. (Gyrations)	115	115	115		115	115	
Moisture Sensitivity, TSR Min.	80						
Dust/Effective Asphalt Ratio, %	0.6 – 1.6						
Lift Thickness, inch	1.5 – 2.0	1.5 – 2.0	2.0 – 3.0		2.5 – 4.0	2.5+	

[1] For RAP percentages between 20 and 30 percent, use asphalt cement grade PG58-28.

Table C502-4
Payment Adjustment Schedule for Superpave

Parameter[1]	Percent of Contract Unit Price/Sublot		
	100	95	50 or Remove[2]
% Air Voids	2.5 – 4.5	2.0-2.4 or 4.6-5.0	<2.0 or >5.0
Average Roadway Density, % G_{mm}	≥ Lower limit	-0.1 to -0.9 below lower limit	-1.0 below lower limit

[1]The percent payment for plant acceptance will be the Lot Average for air voids,. Roadway pay is based on average roadway density of the sublot cores. The percent payment for roadway acceptance will be the average of the percent payments for density. The total percent payment for the Superpave mixture will be the lowest value of the percent payments for plant acceptance and roadway acceptance.
[2]At the option of the Director.
[3]Lot sizes less than 2000 tons will be accepted based on the average of all values reported.

SECTION C503
ASPHALTIC CONCRETE EQUIPMENT AND PROCESSES

C503.01 DESCRIPTION: This section specifies requirements for certification of plant and paving equipment used in producing, placing and compacting asphaltic concrete mixtures. It includes methods and equipment for handling and storing materials and transporting asphaltic concrete to the jobsite.

When less than 250 tons of mixture is required for a project or at separate locations within a project or for short irregular sections within a project, the paving equipment shall conform to the requirements of this Section, except that pavers without electronic screed and slope control devices may be permitted.

C503.02 PLANT EQUIPMENT:

(a) General: Plants furnishing asphaltic concrete mixtures in accordance with Section C501 shall be certified in accordance with current LaDOTD procedures. The plant and laboratory equipment, meters, scales, and measuring devices, shall be tested, inspected and certified every 90 calendar days and more often when directed, by a qualified independent scale service or the Weights and Measures Division, Louisiana Department of Agriculture and Forestry.

Asphaltic concrete shall be mixed at a central mixing plant by either the batch, continuous, or drum mixing process. Aggregates, additives and asphalt shall be proportioned in accordance with the approved Job Mix Formula.

The complete process, including plant with necessary auxiliary equipment and controls, operating procedures, and testing and sampling methods shall be approved during operation prior to use. Such approval will require a verification that the hardening properties of asphalt recovered from samples of mixture taken at the plant will not exceed the absolute viscosity value obtained on residue from the thin film oven test of the original asphalt by more than 2,000 poises. When samples of mixture are taken from the pavement, the absolute viscosity of recovered asphalt shall not exceed 12,000 poises. Asphalt shall be extracted from the mixture in accordance with DOTD TR 308 and recovered in accordance with AASHTO T 170. Absolute viscosity at 60^{O}C (140^{O}F) of the recovered asphalt shall be tested in accordance with AASHTO T 202.

The Contractor shall have a plant site laboratory conforming to LaDOTD Section 722 as a part of the plant facilities. The plant laboratory shall be equipped with a constant temperature oven capable of maintaining any temperature between 100^{O}F and 400^{O}F +/- 5^{O}F for drying aggregates and determining the moisture content of loose mix, a specimen ejector for removing specimens from Marshall molds, and other laboratory equipment used to perform Quality Control Testing.

(b) Asphalt Preparation Equipment: The asphalt working tank shall be capable of uniformly heating the material by approved methods, under positive control, to the required temperature. The asphalt circulating system shall be of adequate size to ensure proper and continuous circulation (except while asphalt is being measured). Pipelines and fittings shall be heated or

insulated. Proper mixing temperature of asphalt shall be maintained. A sampling spigot shall be provided in each tank or the supply line.

(c) Anti-Strip Additive Equipment: Anti-strip additive shall be dispensed directly into the asphalt feed line at a location between the asphalt control valve and the end of the asphalt discharge line. The process for accomplishing this shall be approved and shall provide that the required quantity of anti-strip additive is uniformly proportional to the quantity of asphalt. The process shall have a means by which such uniformity can be easily verified. The equipment shall include a positive displacement accumulating meter which accumulates and displays materials used, and reads to the nearest 0.25 gallon. The additive storage tank shall be a recirculating tank provided with uniform heat and an indicating thermometer at an approved location near the tank discharge point.

(d) Cold Aggregate Feeder: The plant shall be provided with accurate mechanical means for uniformly feeding aggregate into the dryer. Feeders shall be capable of uniformly delivering the maximum number of required aggregate sizes in their proper proportion. When more than one cold bin feeder is used, each shall operate as a separate unit. The individual controls shall be integrated with a master control for all materials.

Cold aggregate bins shall be of sufficient size to store the amount of aggregates required for continuous plant operation. Partitions between bins shall extend a minimum of 1 foot above the top of bins and be sufficient to eliminate contamination. The unit shall include a feeder mounted under bins with each bin compartment having an accurately controlled individual gate to form an orifice for measuring the material drawn from it. The orifice shall be rectangular, with one dimension adjustable by positive mechanized adjustment with locking system. Indicators shall be provided on each gate to show the gate opening in inches.

The plant shall be modified as required to permit recycling operations in conformance with air pollution standards. A separate cold feed system, including weight indicating apparatus, shall be provided for reclaimed asphaltic pavement.

Calibration of gate openings shall be based on the weight of samples taken from bin material. Material shall be fed from a bin through the individual orifice and bypassed to a container to be weighed. Material from each bin shall be calibrated separately. Weight calibration curves shall be developed and kept on file. The calibration process shall be part of the Contractor's quality control and shall be shown as a function of belt speed and gate opening. The method and frequency shall be as directed.

When a cold feed system is the only system used to control the proportioning of aggregates, an automatic plant shutoff shall be provided to operate when any aggregate bin becomes empty or flow is interrupted.

(e) Hydrated Lime Additive Equipment: When hydrated lime additive is mixed with aggregate on the belt feed, the hydrated lime additive equipment shall be interlocked and synchronized with cold feed controls to operate concurrently with the cold feed operation. A positive signal system

which shall automatically shut the plant down when a malfunction causes an improper supply of additive or water shall be installed. The plant shall not operate unless the entire additive system is functioning properly. The hydrated lime additive system shall consist of the following equipment.

(1) A separate bulk storage bin with a vane feeder or other approved feeding system which can be readily calibrated. The system shall provide a means for easy sampling of additive and verification of the quantity dispensed by weight. The feeder system shall require a totalizer.

(2) An approved spray bar or other approved system capable of spraying the composited aggregate with potable water before the addition of hydrated lime additive when the moisture content of the composited aggregate falls below 3 percent. An alternative system for spraying coarse aggregate stockpiles may be allowed when approved. The approved equipment and methods shall consistently maintain the aggregates in a uniform, surface wet condition. The moisture content of the aggregate-lime additive mixture following spraying and mixing shall be introduced into the automatic moisture controls of the plant.

(3) An approved pugmill or other approved mixing device to uniformly coat the composited aggregates with the hydrated lime additive shall be located between the point at which the additive is placed on the composited aggregate and the dryer.

The hydrated lime additive shall be dispensed directly onto the composited aggregate between the cold feed and the dryer. When cold feed control is used, the additive shall be introduced after the composited aggregate has passed through the vibrating scalping screen. The additive shall be uniformly blended with the composited aggregate before entry into the dryer. The process and equipment used for mixing the lime additive and aggregate shall be approved and shall provide that no less than the required amount of additive is continuously blended with the aggregate. When a belt scale is used on the composited aggregate feed belt, it shall be positioned to record the combined weight of the blended aggregate and hydrated lime additive.

(f) Mineral Filler Equipment: Mineral filler shall be proportioned separately from a hopper equipped with an adjustable feed which can be accurately and conveniently calibrated and which shall be interlocked with the aggregate and asphalt feeds. The feeder shall accurately proportion the mineral filler and shall be designed to give a constant flow of material. For batch plants, the mineral filler shall be batched into the mix along with the aggregates. For continuous mix and drum mixer plants, the mineral filler shall be introduced to the mix at an approved location sufficiently in advance of the addition of the asphalt to give proper drying time.

(g) Screening System: Plant screens shall be provided as required for proportioning, capable of screening aggregates to the required sizes and having normal capacity in excess of the full capacity of the mixer or dryer. The screens shall be exposed for inspection as directed.

The plant shall have a scalping system on the fine sand cold bin and other bins as necessary, to ensure removal of objectionable material.

When a belt scale is used, an additional vibrating scalping screen will be required between the aggregate cold feed discharge and belt scale. Other processes will require a vibrating scalping screen between the cold feed discharge and mixing process. The screens shall be sized to remove all oversize aggregate and other objectionable material.

(h) Dryer: The plant shall include one or more dryers that shall continuously agitate aggregates during heating and drying. The equipment shall be capable of heating and drying aggregates in the necessary quantities to supply the mixing unit continuously at its operating capacity and at a specified temperature and acceptable moisture content. The dryer shall be equipped with automatic burner controls. Slope of dryers shall be in accordance with approved recommendations of the dryer manufacturer.

(i) Hot Bins: Bin sizes shall be adequate for continuous operation of the plant at rated capacity. Bins shall be arranged to ensure separate and adequate storage of appropriate fractions of aggregate. Adequate dry storage shall be provided with an overflow pipe or chute to prevent contamination of materials. Each size of aggregate shall be stored in separate bins when screens are used. For screenless operation, aggregate shall be stored in one or more bins with adequate provisions to prevent segregation.

(j) Thermometers: The plant will not be permitted to operate with faulty or inadequate thermometers, and the thermometers listed herein shall be immediately repaired or replaced when faulty operation is detected. The plant shall be equipped with the following thermometers.

> **(1) Asphalt:** A thermometer graduated in 5^{o}F increments and having an accuracy of +/- 5^{o}F shall be fixed in the asphalt feed line at an approved location near the discharge valve at the mixer unit to indicate the temperature of asphalt from storage.
>
> **(2) Anti-Stripping Additive:** A thermometer graduated in 5^{o}F increments and having an accuracy of +/- 5^{o}F shall be placed at an approved point near the anti-stripping tank discharge point prior to the meter.
>
> **(3) Heated Aggregates for Asphaltic Mixture:** The plant shall be equipped with an approved recording thermometer graduated in maximum 10^{o}F increments and having an accuracy of +/- 5^{o}F and a sensitivity which will provide an indication of temperature change at a rate of at least 10^{o}F per minute. It shall be placed at the dryer discharge chute to register automatically the temperature of heated aggregates for batch plants, and at an approved location for continuous or drum-mixer plants to register automatically the temperature of the asphaltic mixture at discharge.

(k) Dust Collector: When a dust collection system returns fines to the mixture, the fines shall be returned at a uniform and regulated rate and at an approved location. In the drum-mix process, baghouse fines shall be added near the asphalt discharge. Baghouse fines shall be dispensed into the aggregate mixture by an approved feed control device from a collector box, surge bin or filler silo. This provision does not apply to primary collectors.

(l) Asphalt Measuring Equipment: Asphalt may be measured either by weight or volumetric measurement.

(1) Weight Measurement: Scales shall conform to Heading (n) of this Subsection and shall read to the nearest pound.

(2) Volumetric Measurement: Measurement by volume shall be by means of a positive displacement pump and shall be recorded in digital form to the nearest gallon. Provisions shall be made to periodically check by weight the quantity of asphalt delivered. The rate of asphalt delivered shall be continuously displayed in digital form corrected to 60^{o}F and the quantity totalized. The quantity of asphalt shall be corrected to the approved job mix temperature. Measurement shall be continuous and accurate to 1.0% of the required measurement.

(m) Mixer Unit: The mixer unit shall produce a uniform blend at the specified production rate, with rapid and complete asphalt coating of aggregate that will give a minimum coating of 95% of the coarse aggregate particles retained on the No. 4 sieve when tested in accordance with AASHTO T 195.

(1) Batch Plants: Batch plants shall have an approved pugmill and spray bar. The pugmill shall have an approved rated capacity. It shall be operated at an approved capacity not to exceed the rated capacity. The mixer shall have an approved timing device to prevent entrance of additional material during mixing. The discharge gates shall be locked to ensure proper mixing. The device shall also lock the asphalt bucket throughout the dry mixing period.

(2) Drum-Mixer Plants: Drum-mixer plants shall have an approved drying and mixing operation. Aggregate and asphalt shall be fed into the drum-mixer so that aggregates are dried, uniformly mixed and adequately coated with asphalt.

(3) Continuous Mix Plants: Continuous mix plants shall have an approved drying and mixing operation. The plant shall have an approved pugmill and spray bar. The pugmill shall be operated at an approved capacity not to exceed the rated capacity with the aggregates uniformly mixed and adequately coated with asphalt.

(n) Weigh Hoppers: Weigh hoppers used in weighing aggregates, asphalt and mixtures shall be constructed to prevent leakage and shall be suspended from scales conforming to this Subsection.

In batch plants, asphalt and aggregate hoppers shall be of sufficient size to weigh the total batch in one operation.

Hoppers for weighing a mixture from a storage or surge bin shall be constructed and used to prevent segregation of mixture loaded into the haul truck.

(o) Scales and Printer Systems:

(1) Scales: Scales shall be accurate to +/- 0.5% of the indicated load. They shall be designed, constructed and installed so that operations do not affect their accuracy.

To determine the total weight of mix loaded in trucks, the Contractor shall provide springless dial scales or load cell scales for weigh hoppers. When weigh hoppers are not used, the Contractor shall provide truck platform scales. The Contractor shall provide belt scales for conveyor systems when the drum-mixer process is used.

(2) Printer System for Batch Plants: To determine percent asphalt cement for the mix, the Contractor shall provide an approved printer system which will print separately the weight of aggregates and asphalt. These weights shall be used for calculating the percent asphalt in the mixture. When a mixture is loaded directly into the haul truck, these weights shall be used for the purpose of determining pay weights for the mix. Printing equipment shall also print zero weight for each batch and total weight of mixture loaded in trucks.

In the event of a breakdown of the printing mechanism, the Contractor may be permitted to operate during the 48-hour period immediately following the breakdown, provided an accurate weight of mixture can be determined and provided repeated breakdowns do not occur.

(3) Printer Systems for Plants Using Storage or Surge Bins: When storage or surge bins are used, the Contractor shall provide truck-platform scales or weigh hopper to determine pay weights for the mix. The weigh hopper shall be equipped with an approved automatic printer system that will print zero weight, batch weight and total weight of mixture loaded into the truck.

Truck-platform scales shall be of sufficient length to weigh the entire unit transporting the mix. Scales shall be equipped with an approved automatic printer system that will print the tare weight as well as the total weight of the unit and the mix.

Scales with electronic digital readout displays, that do not automatically reset to zero after the tare weight is obtained, shall print the tare weight, zero weight and either the total weight of mix loaded into the unit or the total weight of the unit and mixture. Scales with electronic digital readout displays that automatically return to zero after the tare weight is obtained, shall print the tare weight and either the total weight of mix loaded into the unit or the total weight of the unit and mixture.

When scales are located so that a truck leaves the scales between empty weighing and loaded weighing, the printer shall print the tare weight, zero weight before loaded weighing, and total weight of the unit and mix. In the event of a breakdown of the printing mechanism, the Contractor may be permitted to operate during the 48-hour period immediately following the breakdown provided an accurate weight of mixture can be determined and repeated breakdowns do not occur.

(p) Mix Release Agent Dispenser System: The plant shall be equipped with an approved pressurized system capable of spraying a uniform coating of an approved asphalt mix release agent into the haul unit bed prior to loading. Diesel is not allowed as a mix release agent.

C503.03 STORAGE SILOS AND SURGE BINS: Storage silos or surge bins for storing asphaltic concrete mixtures may be used with approval.

(a) Conditions of Use: Use of silos or bins shall conform to the limitations on retention time, type of mixture, heater operation, bin atmosphere, bin level or other characteristics set forth in these specifications and other requirements stated in granting approval of these facilities. An indicator device which is activated when material in the bin drops below the top of the sloped portion shall be affixed to each bin and be visible to the loading operator. Mixtures shall be maintained above this level during production, except for extended periods when the plant is not in operation.

(b) Heated Silos: The storage silo heating system shall be capable or uniformly maintaining mix temperature without localized heating.

Maximum allowable storage time for asphaltic concrete mixtures is 18 hours. The Director may grant permission to exceed the storage time, provided test results and other data indicate that the additional storage time is not detrimental to the mix.

(c) Unheated Surge Bins: The maximum allowable storage time for unheated surge bins is 2 hours. The Department may grant permission to exceed the 2-hour storage time, provided test results and other data indicate that the additional storage time is not detrimental to the mix.

(d) Loading and Unloading Mixtures: The system shall be capable of conveying the mixture from plant to bin or silo by a drag slat enclosed conveyor system or other approved system. The conveyor shall be of an enclosed continuous type designed to prevent spillage and to remove the mix from the plant as fast as it is produced.

The mix shall be transported directly from plant to silos or bins by means of the conveyor system. The mixture from the silo or surge bin shall remain within +/- 15^{o}F of plant discharge temperature.

When the mixture is placed into a silo or bins through a surge device, an automatic warning system shall be provided to audibly warn the operator of a gate malfunction.

Silo or bin unloading gates shall be either clam shell gates operating under gravity feed or other approved gates that will not cause segregation or be detrimental to the mix.

C503.04 HAULING EQUIPMENT: Equipment for transporting asphaltic mixtures shall have tight, clean, smooth metal beds, sprayed daily or as often as directed with an approved asphalt mix release agent. Diesel fuel will not be allowed as a release agent.

Each vehicle shall have a cover of canvas or other suitable material large enough to completely cover the top and extend over the sides of the bed to protect the mixture from the weather or loss of

heat due to excessive haul time. The cover shall have sufficient tie-downs to hold the cover to the bed during hauling. The covers shall be used as directed.

The hauling unit shall discharge the mixture in a continuous manner so the spreader apron of the paver will not be overloaded. When the hauling unit/paver combination causes a surface deviation in excess of 1/8 inch, measured longitudinally with an approved 10-foot metal static straightedge, or other surface defects, the use of such hauling unit or paver shall be immediately discontinued. When rolling straightedge results indicate surface deviations which result in less than 100% payment or excessive correction of bumps, the results will be analyzed to determine if the deviations are caused by the hauling unit/paver combination. If the hauling unit/paver combination is determined to be the cause, their combination shall be discontinued.

Equipment such as bottom dumps shall be capable of discharging the mixture in a uniform windrow longitudinally down the pavement. A maximum of one truck load shall be allowed on the pavement. The temperature of the material in the windrow shall not drop below 275^{o}F. The maximum amount of windrowed material allowed will be reduced if temperature requirements cannot be met. Distortions in surface tolerance resulting from improper unloading of the mixture shall be corrected immediately.

When size, speed and condition of trucks interfere with orderly paving operations, changes in equipment and/or operations shall be made.

Load Restrictions: Load restrictions shall be in accordance with the following:

The Contractor, Subcontractors and suppliers shall comply with legal load restrictions in hauling of materials or equipment on completed bridge structures, bases and pavements. A special permit will not relieve the Contractor of liability for damage resulting from moving of material or equipment. In no case shall the legal load limits be exceeded unless permitted in writing.

Operation of equipment of such weight or height or so loaded as to cause damage or overstress to structures, roadways or other construction will not be permitted. Hauling of materials over the base or surface course under construction shall be limited as directed. The Contractor shall be responsible for all damage done by hauling equipment.

C503.05 PAVING EQUIPMENT: Pavers shall be equipped with screed and slope control devices.

Equipment that is pushed by the paver shall be of such size and capacity that the paver will push them without affecting surface smoothness or edge line of the mixture.

Pavers shall be capable of placing mixtures within specified tolerances. A screed or strike-off assemble shall be used to distribute the mixture over the entire paving strip. The width of the paving strip will be approved. Assemblies, including extensions, shall place mixtures uniform in appearance and quality. The assembly shall be adjustable to provide the required cross section. The assembly shall be equipped with a heater and either a vibrator or tamping bars.

In hilly terrain, when mix is discharged directly into the paver hopper, a positive connection shall be provided between paver and hauling unit. When the hauling unit discharges directly into the paver hopper, the paver shall be capable of pushing the hauling unit.

Pavers shall be equipped with hoppers adequately designed and maintained to prevent spillage. Pavers shall also be equipped with augers to place the mix evenly in front of the screed, including extensions. Pavers shall be equipped with a quick and efficient steering device and shall be capable of traveling both forward and in reverse. Pavers shall be capable of spreading mixes to required thickness without segregation or tearing.

For shoulder construction, modified pavers or widening machines may be used when permitted.

A screed extension shall consist of a screed plate or plates, which meet all requirements for the screed, set forth in these specifications. The bottom surface of the screed extension shall be in the same plane as the bottom surface of the screed plate. A screed extension shall be used when mix is being placed within the traveled way and the paving strip is wider than the screed. Auger assembly extensions shall be used when screed extension in excess of 1 foot on a side are to be consistently used in the pavement operation. Such auger extensions shall extend to within 1 foot of the end of the screed. With approval, the use of an auger extension with screed extensions in excess of 1 foot on one side may be waived for transitions, taper sections and similar short sections. The Director may waive the requirement for auger extensions when hydraulically extended screeds, which trail the main screed assembly, are used, provided required density and surface texture are obtained.

A strike-off assembly or boxed extension shall not be used for paving within the traveled way, except when approved for short irregular sections or sections which are exceptions to the typical.

Pavers shall be equipped with screed and adjustable slope control devices capable of placing the mixture to grade within the tolerances specified, and distributing the mixture over the entire lane width and such partial lane widths as may be approved.

When a malfunction occurs in the automatic screed control device during laydown operations, work may continue for the balance of that day on any course other than the final wearing course. Any overrun resulting from placing material without the automatic screed control device shall be borne by the Contractor. When a screed control device malfunctions during final wearing course paving operations, plant operations shall be immediately discontinued and shall not be resumed until the screed malfunction has been remedied. Material in transit may be placed; however, slope tolerance, surface tolerance and grade tolerance shall be met.

When less than 250 tons of mixture is required for a project or at separate locations within a project or for short irregular sections within a project, the paving equipment shall conform to the requirements of this Section.

C503.06 COMPACTION EQUIPMENT:

(a) General: Compaction equipment shall be self-propelled and be capable of reversing without backlash. Compaction equipment shall be certified prior to use.

Poorly performing compaction equipment will be decertified and shall be replaced with suitable equipment or supplemented as necessary.

(b) Steel Wheel Rollers: Steel wheel rollers may be either vibratory or nonvibratory. Wheels shall be true to round and equipped with suitable scrapers and watering devices. Vibratory rollers shall be designed for asphaltic concrete compaction and shall have separate controls for frequency, amplitude and propulsion.

C503.07 MISCELLANEOUS EQUIPMENT AND HAND TOOLS: Power revolving brooms or power blowers and asphalt distributors shall be provided and maintained in a satisfactory working condition.

In areas that are inaccessible to conventional rollers, satisfactory mechanical compaction equipment, or hot hand tampers, shall be used. Tamping tools may be used for compacting edges.

The asphalt distributor shall be equipped with a suitable spray bar and nozzles designed to distribute material within the specified temperature range and shall be equipped with thermometers to indicate temperature of material in the tank. The distributor shall be designed to maintain a constant uniform pressure on asphaltic material as it passes through nozzles and to apply asphaltic material at the required rate. The distributor shall be equipped with a valve system that control the flow of asphaltic materials, a pump tachometer or pressure gauge that registers pump output, a bitumeter and odometer that indicates both the speed of the distributor in feet per minute and total distance traveled, and measuring devices, as necessary.

Charts shall be provided for an accurate, rapid determination and control of the amount of asphaltic materials being applied per square yard of surface under operating conditions. The bitumeter shall be calibrated to ensure accurate spraying operations and shall be kept clean of asphaltic buildup. The distributor shall be equipped with a hand-held spray attachment for applying asphaltic materials to areas inaccessible with the spray bar.

C503.08 HANDLING OF AGGREGATES: Aggregates shall be stored at the plant site so that no intermixing will occur. Material shall be stockpiled so that no detrimental degradation or segregation of aggregates will occur; no appreciable amount of foreign material will be incorporated into aggregates; and there will be no intermingling of stockpiled materials. Stockpiles shall be well drained.

Blending of aggregates shall be done from cold feed bins and not in stockpiles or on the ground at the plant site or the source.

Gradation and other properties of aggregate in stockpiles shall be such that when the aggregates are combined in proper proportions, the resulting combined gradation will meet the requirements of the approved job mix formula.

Proportioning of material at the cold feed shall be established to meet the approved job mix gradation requirements. Plants operating with only cold feed control shall not require additional manipulation to meet job mix requirements.

(a) Drying: Aggregates shall be heated and dried to produce a mixture meeting specification requirements. The quantity of material fed through the dryer shall be held to an amount which can be adequately heated and dried. When proper drying is not achieved and the quality of the mix is impaired, the Contractor shall adjust the rate of production of the dryer to obtain satisfactory results. The burner fuel used shall be clean burning so there is no contamination of aggregates. Contaminated aggregates or mixtures will be rejected.

(b) Hot Aggregate Storage: When batch plants are used, hot aggregates shall be stored in bins. Storage shall be accomplished to minimize segregation and loss of temperature of aggregates. When plant operation is interrupted and the temperature of material in hot storage cools to 25^{o}F or more below the specified mixing temperature, bins shall be pulled and the material discarded. When a plant changes type of mix and the change requires a change of materials, bins shall be pulled and the material discarded.

C503.09 PROCESSING OF ASPHALT, ADDITIVES AND AGGREGATES: Aggregates shall be combined, either before or after drying, depending on the type of plant used, to meet the approved job mix formula. Asphalt shall be measured and introduced into the mixer or dryer in the quantities specified on the approved job mix formula.

The aggregate, asphalt and the mixture shall be processed at the temperature specified in the approved job mix formula. The temperature of the mixture at discharge from the mixer shall be within +/- 25^{o}F of the optimum mixing temperature in the job mix formula. When the mixing, coating, placing or density requirements are not being met, the Director may require that the job mix temperature be changed or that the foregoing temperature range be restricted.

The moisture content of the final mixture shall be minimized and uniformly controlled to ensure that placing and density requirements are met. The maximum allowable moisture content of the final mixture shall be 0.5% by weight when tested in accordance with DOTD TR 319.

When the automatic adjustments or other critical control and shutoff devices are not functioning, the plant shall not operate.

(a) Plants with Pugmills: Prior to adding asphalt, the combined aggregate shall be thoroughly mixed dry, after which the proper amount of asphalt shall be sprayed over aggregates and mixed to produce a homogeneous mixture in which all aggregate particles are uniformly coated. Mixing times shall be in accordance with the approved job mix formula.

(b) Drum-mixer and Continuous Mix Plants: The system shall provide positive weight control of cold aggregates fed by a belt scale or other device interlocked with the asphalt measuring system to maintain required proportions of combined aggregates and asphalt. Aggregates shall be heated, dried and mixed with asphalt to produce a homogeneous mixture in which all aggregate particles are uniformly coated. Approved methods shall be provided to waste the first and last output of the plant after each interruption.

The Contractor's Certified Asphaltic Concrete Plant Technician shall measure the moisture content of the cold feed aggregates daily when starting the plant. Adequate scheduled tests during plant operations and adjustments to the plant shall be made to correct for moistures in the aggregate. The schedule for moisture content testing will be subject to approval.

Provisions shall be made for introducing the latest moisture content of the cold feed aggregates into the belt weighing system, thereby correcting wet aggregate weight to dry aggregate weight. Dry weight of the aggregate flow shall be displayed digitally in appropriate units of weight and time, and the quantity used totalized. The rate of flow of asphalt anti-strip, and lime (when used) shall also be digitally displayed and the quantity used totalized.

For mineral filler, a separate bin and feeder in accordance with Subsection C503.02(d) shall be furnished with its drive interlocked with the aggregate feeders. Mineral filler shall be introduced directly into the drum near the asphalt discharge.

SECTION C504
ASPHALTIC TACK COAT

C504.01 DESCRIPTION: This work consists of preparing and treating existing asphaltic or concrete surface with asphaltic material in accordance with these specifications and in conformity with the lines shown on the plans or established in the field.

C504.02 ASPHALTIC MATERIALS: Tack coat shall be a modified asphalt emulsion (Grade SS-1, SS-1H or CMS-2) or a modified asphalt emulsion (Grade CRS-2P, CRS-2L, SS-1P or SS-1L) conforming to Section C1002.

C504.03 WEATHER LIMITATIONS: Asphaltic tack coat shall not be applied on a wet surface or when the ambient air temperature is below 40^{o}F.

C504.04 EQUIPMENT: The Contractor shall provide equipment for applying asphaltic material and preparation of the surface to be tacked. Equipment shall conform to Subsection C503.07. A hand-held pressure nozzle may be used for tack coat application in lieu of the spray bar/tachometer combination for irregular sections or short sections of 1500 feet or less.

C504.05 SURFACE PREPARATION: The surface shall be cleaned by sweeping or other approved methods. Edges of existing pavements which will form joints with new pavement shall be satisfactorily cleaned before tack coat is applied.

C504.06 APPLICATION: Asphalt shall be uniformly applied to a clean dry surface with no bare areas, streaks or puddles with an asphaltic distributor at a rate in accordance with Table 3. These rates may be raised or reduced as directed.

TABLE 3
ASPHALTIC TACK COATS

Existing Surface	Rate (Gal/sq yd)[1]
Bleeding Surface Treatment	0.02
Dry Surface Treatment	0.03
New Hot Mix	0.03
Old Hot Mix	0.07
Portland Cement Concrete	0.07
Friction Course	0.05
Cold Planed Surface[2]	0.08

[1] Rates are minimum rates of undiluted asphaltic material.
[2] Minimum of two applications.

The minimum application temperature for modified asphalt emulsions and emulsified asphalt Grades CRS-2L and CRS-2P is 160^{O}F and Grades SS-1, SS-1H, CRS-2, SS-1L and SS-1P is 70^{O}F.

Tack coat shall be applied in such manner as to cause the least inconvenience to traffic. The Contractor will be permitted to apply the tack coat 1 calendar day prior to the mixture laydown; however, when tack coat has been damaged by traffic pick-up or contaminated by dirt, dust or mud, the surface shall be cleaned and retacked prior to the mixture laydown at no direct pay. Tacked surfaces exposed to traffic for more than 24 hours or damaged due to inclement weather shall be retacked at no direct pay.

C504.07 MEASUREMENT AND PAYMENT: Asphaltic tack coat will not be measured for payment; however, payment under the contract will be subject to the payment adjustment provisions of Section C1002 for specification deviations of the asphaltic materials. The Director will provide the payment adjustment percentage for asphaltic materials.

SECTION C505
ASPHALTIC PRIME COAT

C505.01 DESCRIPTION: This work consists of preparing and treating a surface with asphaltic material in conformance with these specifications and in conformity with lines shown on the plans or established in the field.

C505.02 ASPHALTIC MATERIALS: Prime coat shall be cutback asphalt Grade MC-30, MC-70, or AEP Emulsified Asphalt conforming to Section C1002.

C505.03 WEATHER LIMITATIONS: Asphaltic materials shall not be applied on a wet surface or when ambient air temperature is less than 35^{O}F in the shade.

C505.04 EQUIPMENT: The Contractor shall provide the necessary equipment for proper construction of the work. Equipment shall be approved before construction begins and shall be maintained in satisfactory working condition. Equipment shall conform to Subsection C503.07.

C505.05 SURFACE PREPARATION: The surface to be coated shall be shaped to required grade and section shall be free from ruts, corrugations, segregated material or other irregularities, and shall be compacted to required density. Delays in priming may necessitate reprocessing or reshaping to provide a smooth, compacted surface.

C505.06 APPLICATION: Prime coat shall extend 6 inches beyond the width of surfacing shown on the plans. The prime coat shall not be applied until the surface has been satisfactorily prepared and is dry.

Prime coat shall be applied at the rates and temperatures shown in Table 4. Quantities of prime coat shall not vary from that shown in Table 4.

TABLE 4
PRIME COATS

	Application Rate (Gallon/square yard)		**Application Temperature(^{o}F)**	
Asphalt Grade	**Min.**	**Max.**	**Min.**	**Max.**
MC-30	0.15	0.30	60	120
MC-70	0.15	0.30	100	180
AEP	0.15	0.30	60	120

C505.07 PROTECTION: After prime coat has been applied it shall cure for a minimum of 24 hours before the surfacing is placed. The Contractor shall keep traffic off the surface until the prime coat has properly cured, unless otherwise permitted.

If traffic is permitted, the Contractor may be required to spread approved granular material, as directed, over the prime coat at no direct pay.

The prime coat shall be maintained intact. When required, the primed surface shall be thoroughly cleaned prior to the placement of surfacing.

Where the prime coat has failed, the failed area shall be cleaned and be recoated with prime coat at no direct pay. When the prime coat is generally unsatisfactory, the Contractor shall reprime the unsatisfactory surface at no direct pay.

C505.08 MEASUREMENT AND PAYMENT: Asphaltic prime coat will not be measured for payment; however, payment under the contract will be subject to the payment adjustment provisions of Section C1002 for specification deviations of the asphaltic materials. The Director will provide the payment adjustment percentage for asphaltic materials. Payment for surface preparation will be made under other items.

SECTION C506
POROUS ASPHALTIC CONCRETE PAVEMENT

C506.01 DESCRIPTION: This work consists of constructing a porous asphalt pavement on a prepared sub-grade in accordance with this section and in conformity with the lines, grades, thicknesses and typical sections shown on the plans or established in the field.

The porous asphaltic concrete pavement shall consist of a mixture of aggregates, bituminous binder material including polymer modified asphalt, fibers, mineral filler, anti-strip additives, and other optional additives as may be specified.

C506.02 REFERENCES:

- AASHTO T96 – Standard Method of Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact
- AASHTO T209 – Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
- AASHTO T283 – Standard Method of Test for Resistance of Compacted Asphalt Mixtures to Moisture-Induced Damage
- ASTM D3203 – Standard Test Method for Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures
- ASTM D4791 – Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
- ASTM D5821 – Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate
- ASTM D6752 – Standard Test Method for Bulk Specific Gravity and Density of Compacted bituminous Mixtures Using Automatic Vacuum Sealing Method
- NAPA IS-115 – Open-Graded Asphalt Friction Courses, Design, Construction & Maintenance
- NAPA IS-131 – Porous Asphalt Pavements for Stormwater Management
- NAPA – National Asphalt Pavement Association
- NCAT – National Center for Asphalt Technology

C506.03 MATERIALS: The Contractor shall keep accurate records, including proof of deliveries of materials for use in porous asphaltic concrete mixtures. Copies of these records shall be furnished to the Director upon request. Material shall conform to the following Subsections:

Asphalt (C1002.01)
Silicone and Anti-Strip Additives (C1002.02)
Aggregates (C1003.01 & C1003.06)
Hydrated Lime (LaDOTD 1018.03(a))
Mix Release Agent (LaDOTD 1018.26)

as well as the following:

(a) Asphalt Binder: An asphalt binder shall meet the requirements of section C502.02.

(b) Additives: Additives such as cellulose or mineral filler, or anti-strip additives, shall be included as allowed by the Director.

(c) Aggregates: Coarse aggregate shall be that part of the aggregate retained on the No. 8 sieve and shall consist of clean, tough, durable fragments of crushed stone, or crushed gravel of uniform quality. Coarse aggregate shall:

(1) Have a percentage of wear as determined by AASHTO T96 of not more than 30 percent;

(2) Have at least 75% by mass (weight) of the material coarser than the No. 4 sieve with at least two (2) fractured faces, and 90% shall have one or more fractured faces as determined by ASTM D5821;

(3) Have not more than 5% of flat or elongated pieces (>5:1) as specified in ASTM D4791;

(4) Be free from clay balls, organic matter, and other deleterious substances.

(5) The nominal maximum aggregate size shall be ¾ inch.

C506.04 JOB MIX FORMULA: The Contractor shall develop for approval a job mix formula for proportioning of each type of porous asphalt pavement proposed for use as specified in accordance with C501 and the following:

(a) The recommended percent of bituminous material is 6% minimum based on the total weight of the mix, to assure adequately thick layers of asphalt around the aggregate.

(b) Fines in the job mix formula shall have a maximum of 20% passing the #4 sieve and 2.5% passing the #200 sieve.

(c) Mix design shall result in pavement that accepts 60 inches/hour (30 gallons per hour in a 12 inch diameter ring). Testing shall be in accordance with NCAT.

(d) Air void content shall be >16%.

C506.05 WEATHER LIMITATIONS: The Contractor must comply with Section C501 as well as the following:

(a) The ambient air temperature during the past 24 hours shall be above 50 degrees Fahrenheit,

(b) The asphalt laying temperature should be within 10 degrees Fahrenheit of the comparative temperature in the approved job mix design.

C506.06 SURFACE PREPARATION: The surface to be covered shall be approved prior to placing mixtures. The Contractor shall maintain the surface until it is covered. The stormwater storage/infiltration beds shall be in accordance with the following:

(a) Coarse aggregates shall meet the size and grading requirements as defined in Standard Sizes of Coarse Aggregate, AASHTO Specifications, 30th Ed., 2010, or later, unless otherwise specified.

(b) Coarse aggregate for groundwater recharge bed shall be 2-1/2" to 1-1/2" uniformly graded Crushed coarse aggregate, with a wash loss of no more than 0.5%, AASHTO size number 2 per AASHTO Specifications, 30th Ed., 2010, or later.

(c) Choker base course aggregate for groundwater recharge bed shall be 1" to 3/8" uniformly graded, crushed coarse aggregate, or approved equal, AASHTO Specifications, 30th Ed., 2010, or later.

(d) Filter fabric shall be Propex PERC™ Pervious Concrete Infiltration Fabric or approved equal.

(e) Impervious liner – shall be Permalon, PLY-X 150, or approved equal.

C506.07 JOINT CONSTRUCTION:

(a) Joints between old and new pavements or between successive days work shall be made to ensure a thorough and continuous bond between the old and new mixtures. Whenever the spreading process is interrupted long enough for the mixture to attain its initial stability, the paver shall be removed from the mat and a joint constructed.

(b) Transverse joints shall be butt joints formed by cutting the pavement in a vertical plane at right angles to the centerline, at location approved by the Director. The Director will determine locations by using a straightedge at least 16 feet long. The transverse joint shall be thoroughly coated with Type RS-1 emulsified asphalt just prior to depositing the pavement mixture when paving resumes.

(c) Tapered joints shall not be allowed. Longitudinal joints that have become cold shall be coated with Type RS-1 emulsified asphalt before the adjacent mat is placed. If directed by the Director, joints shall be cut back to a clean vertical edge prior to applying the Type RS-1 emulsified asphalt.

C506.08 HAULING, PAVING AND FINISHING: Mixtures shall be transported in clean vehicles with tight, smooth dump beds that have been sprayed with a non-petroleum release agent or soap solution to prevent the mixture from adhering to the dump beds.

Mineral filler, fine aggregate, slag dust, and similar materials shall not be used to dust truck beds.

(a) The asphaltic mixture shall be placed using self-propelled paving equipment with an activated screed or strike-off assembly capable of being heated in necessary, and capable of spreading and finishing the mixture without segregation. Track pavers are recommended.

(b) The use of water to cool the asphaltic mixture is prohibited.

(c) Place lifts no more than 24 hours after each previous lift to minimize the use of tack coats. Tack coats will only be allowed if required by the Director.

(d) The finished surface shall be of a uniform texture and evenness, and shall not show any indication of tearing, shoving, or pulling of the pavement during placement.

C506.09 COMPACTION:

(a) General: After placement, mixtures shall be uniformly compacted by rolling while still hot. If continuous roller operation is discontinued, rollers shall be removed to cooler areas of the mat, where they will not leave surface indentations. The use of steel wheel rollers which result in excessive crushing of aggregate will not be permitted.

(1) Roll the asphalt using a two-axle tandem roller when it is cool enough to withstand the roller without displacement of the asphalt, and using rollers sufficient to compact the asphalt without crushing the aggregate or compromising the required void content and infiltration rates.

(2) The number, mass (weight), and type of rollers furnished shall be sufficient to obtain the required compaction while the mixture is in a workable condition. Generally one breakdown roller will be needed for each paver used in the spreading operation.

(A) Breakdown rolling shall occur when the mix temperature is between 275 and 325 degrees Fahrenheit.

(B) Intermediate rolling shall occur when the ix temperature is between 200 and 275 degrees Fahrenheit.

(C) Finish rolling shall occur when the mix temperature is between 150 and 200 degrees Fahrenheit.

(3) Unless otherwise specified, the longitudinal joints shall be rolled first. Next, the Contractor shall begin rolling at the low side of the pavement and shall

proceed toward the center or high side with lapped rolling parallel to the centerline.

(4) Roll until all roller marks are gone; however, avoid excessive rolling which could reduce the infiltration capabilities of the asphalt.

(5) To prevent adhesion of the mixture to the rolls, rolls shall be kept moist with clean water or water mixed with very small quantities of detergent or other approved materials. Excess liquid will not be permitted.

(6) Any mixture that becomes loose and broken, mixed with dirt, or is in any way defective shall be removed and replaced with a fresh hot mixture. The mixture shall be compacted to conform to the surrounding area with segregation. Any area showing deficiencies shall be replaced at the Contractor's expense.

(b) Hand Compaction: Along forms, curbs, headers, walls and at other places inaccessible to rollers, mixture shall be uniformly compacted to the satisfaction of the Director with approved hand tampers or mechanical tampers, conforming to Subsection C503.07.

C506.10 PAVEMENT SAMPLES: Samples shall be cores approximately 4" in diameter taken by an approved core drill. The Contractor shall furnish samples cut from the completed work. The removed pavement shall be replaced with hot or cold mixture and refinished during the work day coring is performed. No additional compensation will be allowed for furnishing test samples and replacing the areas with new pavement. Samples shall be taken by the Contractor in the presence of the Director's representative from areas selected by the Director in accordance with Subsection C501.11(b)(2)c. When the design thickness is greater than 1-3/8", cores less than 1-3/8" thick shall not be used as pavement samples for payment determination.

Cores shall be transported to the plant in approved transport containers or one-gallon friction-top cans. Regardless of transport container used, the container will be sealed, signed, and dated by the inspector using an approved method. The individually wrapped core will also be sealed, signed, and dated by the inspector using an approved method. Any evidence of tampering with the core wrappings, sticker, or of opening the container or friction-top can will result in the cores being rejected. Additional pavement samples will be required.

C506.11 ACCEPTANCE REQUIREMENTS: All Department inspection procedures, including sampling and testing, form the basis for acceptance of the asphaltic concrete. Any section of pavement that is obviously deficient shall be satisfactorily corrected or replaced. Sampling and testing shall be accomplished following a stratified sampling plan in accordance with the Materials Sampling Manual and specified test procedures. Times and locations shall be established by the Director.

A standard lot is the production of asphaltic concrete mix from the same job mix formula produced for the Department at an individual plant in one day. Additional adjustments may be made to the standard lot size as specified in this Subsection. Minor adjustments will be made to the lot size to accommodate hauling unit capacity.

Testing:

(1) Quality Assurance (QA) Inspector: The Contractor shall provide at the Contractors' sole expense and the Director's approval a third-party QA Inspector to oversee and document mix production. All mix testing results during production shall be submitted to the QA Inspector.

The QC plan may be altered at the discretion of the Director and based on written recommendations from the QA Inspector.

For small batch production, the Director may also modify or eliminate some testing requirements in the QC plan.

(2) During Production: The Contractor shall sample, test, and evaluate the mix in accordance with the methods and minimum frequencies in the Table 1. Test results shall be delivered to the Director.

Table 1: QC/QA Testing requirements during production

Test	Minimum Frequency	Test Method
Temperature in Trucks Prior to leaving Plant	Six times per day	--
Gradation	Greater of either (a) 1 per 500 tons, (b) 2 per day, or (c) 3 per job	AASHTO T30
Binder Content	Greater of either (a) 1 per 500 tons, (b) 2 per day, or (c) 3 per job	AASHTO T164
Air Void Content	Greater of either (a) 1 per 500 tons, (b) 2 per day, or (c) 3 per job	ASTM D6752, Volumetric Measurement

Testing of the temperature, binder content, and air void content shall be within the limits set by this specification.

Testing of the gradation shall not vary from the approved design mix by more than the tolerances in Table 2.

Table 3: QC/QA testing tolerances during production

Sieve Size	Percent Passing
0.75	--
0.50	+/- 6.0
0.375	+/- 6.0
No. 4	+/- 5.0
No. 8	+/- 4.0
No. 200	+/- 2.0

Should the asphalt fail to meet all testing requirements initially, production modifications shall be made until the porous asphalt mix is within required tolerances. After the corrective action has been taken, the resulting mix will be sampled and tested again at the Contractor's expense.

If the resampled asphalt fails to meet all testing requirements again, the Director will be immediately informed and provided with the test results. The Director may determine that it is in the best interest of the project that production is ceased at that time. The Contractor will be responsible for all costs associated with the inability of the asphalt plant to meet all testing requirements.

(3) Following Placement: The full permeability of the pavement surface shall be tested prior to final acceptance in accordance with NCAT.

Test in place base and surface course for compliance with requirements for thickness, void content and unit weight as described above by using 1' x 1' slab samples. Repair or remove and replace unacceptable work as directed by the Director at the Contractor's cost.

Test finished surface for smoothness using a 10 foot straightedge applied parallel with and at right angles to the centerline of the paved area. Surface will not be accepted if gaps or ridges exceed 3/16 of an inch. The smoothness requirements specified herein apply only to the top lift of each layer, when asphalt is constructed in more than one lift.

QC/QA requirements during paving are summarized in Table 3.

Table 3: QC/QA requirements during paving

Activity Schedule	Frequency	Tolerance
Inspect truck beds for pooling (draindown)	Every truck	--
Take surface temperature behind joint heater	Each pull	10 degrees F of compaction temperature
Test surface smoothness and positive drainage with a 10 foot straight edge	After compaction	3/16 inch
Hose test with at least 5 gpm water	After compaction	Immediate infiltration, no puddling

C506.12 PROTECTION OF ASPHALTIC PAVEMENT: The minimum times prior to opening the pavement to traffic are as follows:

- After pavement has been permitted to cool to below 100 degrees Fahrenheit for all traffic,
- 24 hours for pedestrian traffic, and
- 48 hours for vehicular traffic.

The Contractor shall protect the porous asphalt from severe weather conditions and contamination by dust, dirt, mud, or other fine grained material or sediment. The asphalt shall be protected by an approved method from the time of placement until final acceptance of the project. Any damage to the porous asphalt caused by the Contractor's equipment shall be repaired by the contactor at no cost to the City. Any portion of the porous asphalt that becomes contaminated to the extent that drainage is reduced or inhibited shall be removed and replaced at no expense to the City.

C506.13 MEASUREMENT: Asphaltic tack coat, prime coat or curing membrane will not be measured for payment.

(a) Weight Measurement: Porous asphaltic concrete will be measured by the ton of 2,000 pounds from printed weights as provided in Section C503. Stamped printer tickets will be issued for each truckload of material delivered. Material lost, wasted, rejected or applied contrary to specifications will not be measured for payment.

Estimated quantities of porous asphaltic concrete shown on the plans are based on 110 lb/sq yd/inch thickness.

(b) Volume or Area Measurement: The quantities for payment will be the design quantities specified in the plans and adjustments thereto. Design quantities will be adjusted when the Director makes changes to adjust to field conditions or when design changes are necessary. Design quantities are based on the horizontal dimensions and compacted thickness of the completed course shown on the plans.

(c) Geotextile: Geotextile fabric shall be measured by the square yard, based on the theoretical area on the plans. Fabric used in patching or overlaps shall not be measured for payment.

C506.14 PAYMENT: Payment for porous asphaltic concrete will be made at the contract unit price on a lot basis. When the mix does not conform to acceptance requirements, payment will be made at an adjusted price per unit of measurement in accordance with Section C1002 and Table 2. The Director will provide adjustment percentages for properties of asphaltic materials.

(a) General: Payment for porous asphaltic concrete will include furnishing all required materials, producing the mixtures, preparing the surfaces on which the mixtures are placed, hauling the mixtures to the work site, and placing and compacting the mixtures.

(b) Wearing Course Mixes: The lowest percentage of contract price will be used for final adjustment in unit price for deficiencies in Marshall Stability, pavement density, surface tolerance, anti-strip additive, and porous asphalt cement properties.

(c) Base, Binder and Shoulder Mixes: The lowest percentage of contract price will be used for final adjustment in unit price for deficiencies in Marshall Stability, pavement density, anti-strip additive, and porous asphalt cement properties.

(d) Geotextile: Geotextile fabric will be paid for per square yard at the contract unit price which includes furnishing equipment, labor and materials to complete the item.

Payment will be made under:

ITEM NO.	PAY ITEM	Pay Unit
C506(51)	Porous Asphaltic Concrete	Ton
C506(52)	Porous Asphaltic Concrete	Cubic Yard
C506(53)	Porous Asphaltic Concrete (___" Thick)	Square Yard
C501(54)	Geotextile Fabric for Paving	Square Yard

SECTION C507
ASPHALTIC BINDERS

C507.01 DESCRIPTION: This section specifies requirements for the selection and placement of asphaltic interlayer reinforcement for flexible and rigid pavement.

C507.02 REFERENCES:

- Asphalt Institute Handbook.
- AASHTO Standard Specification for Highway Bridges.
- ASTM D276 – Standard Test Methods for Identification of Fibers in Textiles.
- ASTM D4595 – Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.
- ASTM D4694 – Standard Test Method for Deflections with a Falling-Weight-Type Impulse Load Device.
- ASTM D4759 – Standard Practice for Determining the Specification Conformance of Geosynthetics.
- ASTM D5340 – Standard Test Method for Airport Pavement Condition Index Surveys.
- ASTM D5261 – Standard Test Method for Measuring Mass per Unit Area of Geotextiles.
- ASTM D6637 – Standard Test Method for Determining Tensile Properties of Geogrids by the Single or Multi-Rib Test Method; 2001.
- DIN EN ISO 10319 (2008-10) – Geosynthetics - Wide-Width Tensile Test (ISO 10319:2008).
- FHWA Federal Highway Administration – Design Guidelines.

C507.03 SYSTEM DESCRIPTION:

(a) Flexible Pavements: Provide interlayer reinforcement system installed between asphalt layers in a pavement structure to distribute loads, reinforce the pavement and reduce reflective cracking distresses.

(b) Rigid or Composite Pavements: Provide interlayer reinforcement system installed between freshly leveled asphalt overlay to absorb the strain and stress energy developed by traffic-induced working concrete joints and by slab shrinkage and expansion due to thermal changes.

C507.04 QUALITY ASSURANCE:

(a) Manufacturer Qualifications:

(1) Manufacturer with at least 10 years of documented experience in the manufacture and installation of fiberglass interlayer grids to reduce thermal or load associated cracking distress, and in the manufacture of the tack coat that meets the specification.

(2) Manufacturer with documented evidence of an established quality control program to assure products with consistent compliance with the requirements of this specification. Such a program would be ISO 9001:2008 Registration.

(3) Annual conformance testing performed by an accredited third party testing facility.

(b) Installer Qualifications:

(1) Firm with documented experience in the installation of fiberglass interlayer grid systems with at least two projects of similar construction and scope.

C507.05 DELIVERY, STORAGE, AND HANDLING:

(a) Store products in manufacturer's unopened packaging until ready for installation.

(b) Store in a dry, covered location that is free of dust, dirt, and moisture. Prevent excessive mud, fluid concrete, asphalt, or other deleterious materials from coming in contact with reinforcement grid materials.

(c) Store at temperatures between minus 29°C (minus 20°F), below 82°C (180°F) and maximum relative humidity of 85%.

C507.06 PROJECT CONDITIONS:

(a) Do not place grid reinforcement when the asphalt surface is wet, or contaminated with oil, soil or excessive dust.

(b) Existing pavement should show no signs of poor drainage, pumping of fines, excessive deflections or structural instability.

(c) Receiving surface shall be smooth, with the existing cracks pretreated per SHRP-H-348.

(d) Make all repairs as required prior to placement of interlayer system.

(e) Do not install asphalt on the grid reinforcement when the underlying asphalt surface is hotter than 60°C (140°F) or in the case of new asphalt, do not install prior to the asphalt cooling to 43°C (110°F) at least once previously.

C507.07 MATERIALS:

(a) The asphalt reinforcement grid shall consist of a high strength, fiberglass grid custom knitted and coated with an elastomeric polymer and self-adhesive glue.

(b) In addition, the reinforcement grid shall have the following/adhere to the following Minimum Average Roll Values (MARV) for material properties and should adhere to the strength properties in Table 1.

Table 1 –Material and Strength Properties

	PRODUCT PROPERTIES	METHOD	UNITS	Type 1	Type 2
Material Properties	Aperture Size (Center to Center)		mm (inch)	12.5 x 12.5 (0.5 x 0.5)	25.0 x 25.0 (1.0 x 1.0)
	Percent Open Area	CW-02215 MOD.[1]	%	Greater than or equal to 50	Greater than or equal to 50
	Fiberglass Coating			Elastomeric Polymer	Elastomeric Polymer
	Mass / Unit Area	ASTM D5261	g/m² (oz/yd²)	405 (12.0)	405 (12.0)
	Roll Width		m (ft.)	1.5 (5.0)	1.5 (5.0)
Strength Properties	Fiberglass Coating Softening Point	ASTM D36	°C (°F)	Greater than 149 (300)	Greater than 149 (300)
	Tensile Strength (MD x CD)	ASTM D6637	kN/m (lb./in)	100 x 100 (560 x 560)	100 x 100 (560 x 560)
	Tensile Strength @2%	ASTM D6637	kN/m (lb./in)	80 x 80 (456 x 456)	80 x 80 (456 x 456)
	Elongation at Break	ASTM D6637	(%)	Less than 3	Less than 3
	[1] - Army Corp of Engineers test method correlated to light emitted through fabric.				

Table 2 Product Performance Requirements

	TEST DESCRIPTION	TEST METHOD	METHOD OF MEASURE	PERFORMANCE
Performance Requirements	Coating Softening Temperature vs. HMA Asphalt Binder Compaction Temperature	Temperature Comparison	Job Mix Formula Compaction Temperature Requirement	Coating Softening Point > HMA Compaction Temperature
	Field Millability and Recyclability Validation	Field Milling of Asphalt with Interlayer System	References or Reports	Documented Experience
	Asphalt : Grid composite stiffness for durability of composite layers over life of pavement during individual and long term deformation	3Pt Beam Test at 70°F, Grid with polymer tack at mid depth relative to a control with polymer emulsion tack coat – cyclic stress controlled loading	Minimum Improvement Factor vs. Control	> 3x
	Fatigue and Rutting Performance	Circular Full Scale APT [1] Testing vs. Control	Rutting and Fatigue	> 2x (rutting) >3x (fatigue)
	Fatigue and Reflective Cracking	MMLS3 Scaled APT [1] Testing vs. Control	Fatigue and Reflective Cracking Testing	>3x
	Full Scale Crack and Durability Test	NCAT Test Track [1] Performance	Number of ESALS	>40 million

[1] : APT – Accelerated Pavement Testing

(c) The hot applied tack shall have the following/adhere to the following properties in Table 3.

Table 3 Typical Physical Properties

PARAMETER	TEST METHOD	MIN	MAX
Rotational Viscosity @ 149 °C, cP	AASHTO T316	----	3000*
Penetration @ 25 °C , dmm	ASTM D5	----	25
Softening Point, °C	ASTM D36	70	99
Original DSR @ 82 °C , G*/sin δ, kPa	AASHTO T315	1.0	----
Creep Stiffness, m-value @ 0 °C on original binder	AASHTO T313	0.285	----

* Rotational viscosity shall be waived if material can be successfully applied in the field.

C507.08 PREPARATION:

(a) Do not begin interlayer system until existing pavement condition has been evaluated and all repairs have been completed.

(b) Seal cracks between 3mm (1/8”) and 6 mm (1/4”) with an acceptable crack filler. Repair wider cracks using a method that provides a level surface. All holes shall be filled with hot asphalt and compacted level with adjacent surfaces.

(c) Surfaces shall be mechanically cleaned by sweeping and vacuuming and be free of oil, vegetation, sand, dirt, water, gravel, and other contaminants prior to placement of interlayer reinforcing.

(d) Cracks shall be marked and recorded prior to and after the true and leveling course. Identifying and preserving the crack location will ensure that the interlayer system is properly centered on each crack when full interlayer system coverage of the site is not specified.

C507.09 INSTALLATION:

(a) Storage of Material:

(1) Prior to use, store reinforcement rolls in unopened packaging vertically (on end) under dry, covered conditions free from dust, dirt, and moisture to prevent roll distortion and contamination.

(2) Store the product at temperatures above minus 29°C (-20°F), below 82°C (180°F) with a relative humidity of less than 85%.

Install interlayer reinforcement system in accordance with Tensar International’s installation guidelines.

(b) Leveling Course:

(1) Leveling course shall be a minimum thickness of 19 mm (3/4”) and shall have a surface temperature cooler than 60°C (140°F) and will have cooled to 43°C (110°F) at least once previously.

(2) Crack areas showing excessive surface irregularities shall be leveled prior to placement.

(3) Slab joint showing upward tenting shall be saw-cut to relieve pressure prior to leveling.

(c) Asphalt Reinforcement Grid Placement:

(1) Surface temperature shall be between 5°C and 60°C (40-140°F) prior to laying the grid reinforcement.

(2) The placement surface must be dry. Since moisture affects the adhesion of the grid to the pavement surface, grid placement should not be undertaken if rain is likely to fall prior to covering the grid with an asphalt mat overlay. Grid that is placed and will not adhere due to moisture shall be removed and replaced at the Contractor's expense.

(3) Reinforcement grid shall be laid out by mechanical means or by hand using sufficient pressure to eliminate ripples. Remove any ripples by pulling the grid tight. Cutting of the grid may be done on tight radii to prevent ripples.

(4) Lap transverse joints in the direction of the paving 76 mm to 152 mm (3-6"); longitudinal joints shall be overlapped 25 mm to 50 mm (1-2") or as recommended by the manufacturer, whichever is greater.

(5) Following the placement of the material, activate self-adhesive glue by rolling with a rubber coated drum roller or a pneumatic tire roller. In no instance shall steel-wheeled or vibratory rollers be used. Rolling shall continue until the adhesive is activated and the grid is bonded to the truing and leveling course. During rolling operations, roller tires shall be kept clean to the satisfaction of the Director. Reinforcement shall be laid and rolled over ironworks (i.e., manhole covers, drainage grates, etc.). Once the grid has been rolled, these portions of the mats covering the ironworks shall be removed by cutting the reinforcement grid with a utility knife or other similar tool.

(6) Construction and emergency vehicles will be allowed to run on the reinforcement grid after rolling. However, any damaged or de-bonded sections of the grid resulting from these vehicles, as determined by the Director, shall be immediately replaced with new grid sections, taking care to place the adhesive backing down and to overlap the grid already in place. As before, replacement sections shall be rolled in accordance with manufacturer's recommendations. Interlayer system shall be rolled until the adhesive is activated and the replacement grid section is bonded to the truing and leveling course. Any dirt, dust or other contaminants deposited on the grid-covered truing and leveling course by the construction equipment, maintenance vehicles, or emergency vehicles shall be removed by mechanical sweeping or vacuuming the surface. No additional payment will be made to replace sections of grids damaged by construction equipment, maintenance vehicles, or emergency traffic. No payment will be made to sweep or vacuum the surface, or to remove contaminates deposited by such traffic.

(7) Protect the asphalt reinforcing grid until placement of the finished asphalt topping. Repair damaged sections prior to placement of finished asphalt topping.

(8) Place the asphaltic overlay course the same day the interlayer reinforcing grid is placed.

(9) Overlay course shall be a minimum thickness of 40 mm (1-1/2").

(10) When a tack coat is specified, the approved tack coat should be used in conjunction with the interlayer system.

(i) If placed prior to the interlayer it must fully cure prior to placement of interlayer system,

(ii) if placed after to interlayer material it must fully cure prior to any construction traffic over the surface including paving

(d) FIELD QUALITY CONTROL

(1) Testing and Inspection shall be provided by an independent laboratory provided by the Contractor and acceptable to the Director.

(2) Perform adhesion tests in accordance with the following:

(i) Place approximately 1 m² (1 sq. yd.) of interlayer reinforcing grid on a properly prepared leveling course that is representative of the project condition.

(ii) Activate self-adhesive glue by rolling with a rubber-tired roller or by applying adequate pressure to fully activate the pressure-sensitive adhesive.

(iii) Use a calibrated spring balance by inserting the hook of the balance under the center of the grid and pulling upward until the grid starts to pull away from the surface.

(iv) A 9 kg (20 pound) pull is required without pulling the grid free or creating ripples in the grid.

(v) Consult grid manufacturer if grid does not meet this pull rating and do not place asphalt topping until an acceptable adhesion is achieved.

(3) Frequency of Tests:

(i) Adhesion Test: Provide a minimum of one test per 300 m² (3,000 sq. ft.) of surface area.

C507.10 PAYMENT: Payment for asphaltic binder will be made at the contract unit price.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C507(51)	Asphaltic Binder	Square Yard

SECTION C509
COLD PLANING ASPHALTIC PAVEMENT

C509.01 DESCRIPTION: This work consists of removing asphaltic concrete surfacing in accordance with these specifications and in conformity with the average depth, width, grade, cross-slope and typical sections shown on the plans or established in the field.

C509.02 EQUIPMENT: Equipment for cold planing asphaltic surfacing shall be certified, self-propelled planing machines or grinders. They shall have sufficient power, traction and stability to remove the thickness of asphaltic concrete necessary to provide profile grade and cross slope uniformly across the surface. Cold planing equipment shall be capable of working from an erected string line, shoe device or a traveling reference plane that will accurately reflect, for a minimum length of 30 feet, the average grade of the surface on which it is to be operated and shall have an automatic system for controlling cross slope at a given rate. Adequate loading equipment shall be provided to immediately remove materials cut from the surface and discharge the cuttings into a truck or on the shoulder as specified or directed. When cuttings are placed directly on the shoulder or used in asphaltic concrete, surfacing with lightweight aggregate shall be removed separately. Adequate personnel shall be provided to ensure that the cuttings are removed from the surface daily. The drum shall be round and true with sufficient number of teeth to yield a uniform and fine textured surface for bonding of the subsequent overlay. The machine shall be equipped with means to control dust created by the cutting action and shall have a system providing for uniformly varying the depth of cut while the machine is in motion.

C509.03 CONSTRUCTION REQUIREMENTS:

(a) GENERAL: The maximum forward speed of the planing machine shall be 40 feet per minute. The Director may approve forward speeds greater than 40 feet per minute provided the planed surface is uniform and fine textured and conforms to the surface tolerance requirements for a binder course. This speed shall be reduced as directed to provide a planed surface of uniform and fine texture with the specified grade and cross slope. Ridges left in the surface due to missing teeth shall be corrected by additional passes. The maximum depth of cold planing shall be 2 inches per pass when traffic is being maintained. Teeth lost during planing shall be immediately replaced.

Thirty foot (minimum) traveling reference plane shall be used on each pass of the planing machine. A shoe device to match the curb may be used when directed. The reference plane shall be placed on the best available adjacent surface.

When the entire roadway width has not been planed to a flush surface by the end of a work period resulting in a vertical or near vertical longitudinal face exceeding 2 inches in height, this longitudinal face shall be sloped as directed. Transverse faces present at the end of a work period shall be beveled as directed. Provisions shall be made at drives and turnouts to maintain local traffic.

Asphaltic concrete next to structures that cannot be removed by the planing machine shall be removed by other acceptable methods.

Pavement surfaces resulting from planing operations shall be of uniform texture, grade and cross-slope and free from loose material. Planed surfaces not meeting these requirements shall be replaned at no direct pay. No uneven, undulating surfaces will be accepted. The Contractor shall provide drainage of planed areas by cutting through the shoulder to the ditch.

The cold planing operation shall not precede the subsequent paving operation by more than 10 calendar days. This time may be extended by the Director upon request by the Contractor if extensive joint repairs or patching is required. For single lift overlays requiring shoulder stabilization, the cold planing operation shall not precede the subsequent paving operation by more than 30 days.

On roadways that are open to traffic, pavement striping removed by planing shall be replaced with temporary pavement markings at the end of each day's planing operations in accordance with Section C713.

Unless otherwise specified, surfacing material removed by planing shall become the property of the Contractor and shall be disposed of in accordance with Subsection C202.02. When specified on the plans, a portion or all of the surfacing material removed by planing will be retained by the Department and shall be hauled by the Contractor to the specified location and stockpiled as directed. Excess material shall then become the property of the Contractor and shall be disposed of in accordance with Section C202.02.

Required joint repairs shall be made after planing. Pavement patching should be completed before planing. When additional areas requiring patching are exposed by planing operations, such additional patching shall be performed after planing. Pavement patching shall be in accordance with Section C724.

(b) Except when planing reaches to the existing concrete base layer, the surface tolerance requirements of the cold planed surface shall meet the requirements for binder course in Section C501.

C509.04 MEASUREMENT: Measurement will be made by the square yard of asphaltic concrete surfacing satisfactorily removed.

C509.05 PAYMENT: Payment of cold planing asphaltic pavement will be made at the contract unit price, which includes removal of asphaltic concrete surfacing to the necessary depth, texturing the pavement surface, disposal of removed materials and cleaning the roadway. Payment for temporary pavement markings will be included under appropriate pay items.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C509(51)	Cold Planing Asphaltic Pavement (___" Average Thick)	Square Yard

PART VI - PORTLAND CEMENT CONCRETE PAVEMENT

SECTION C601
PORTLAND CEMENT CONCRETE PAVEMENT

C601.01 GENERAL CONSIDERATIONS:

(a) The Contractor shall construct the roadway pavement in substantial conformance with these specifications and in reasonable close conformity with the locations, lines, grades, slopes, thickness, sections and strength shown on the plans and included herein.

(b) Pavement shall be Portland Cement Concrete constructed over an approved base.

C601.02 REFERENCED SPECIFICATIONS:

LaDOTD	Louisiana Standard Specifications for Roads and Bridges, latest edition
ASTM	American Society of Testing and Materials
ACI	American Concrete Institute
AASHTO	American Association of State Highway and Transportation Officials, "Standard Specifications for Transportation, Materials and Methods of Sampling & Testing"
AWPA	American Wood Preservers Association

C601.03 PAVEMENT THICKNESS: The pavement thickness shall be dependent upon soil properties, traffic type and frequency as determined by the Director. Unless otherwise stated, all streets shall be reinforced concrete having a minimum thickness of eight (8") inches.

C601.04 MATERIALS: Materials shall be furnished only from sources approved by the Director.

(a) Cement: Shall conform to the requirements of ASTM C 150, Type I or Type II.

(b) Aggregates:

(1) Fine aggregate shall be a clean natural sand conforming to the requirements of ASTM C 33.

(2) Coarse aggregate shall be clean, hard, durable gravel, crushed stone or crushed concrete conforming to the requirements of ASTM C 33, Gradation No. 467 or 57.

(c) Admixtures:

(1) If used, air entraining admixtures shall conform to the requirements of ASTM CZ60.

(2) Water used in mixing concrete shall be potable and fit for human consumption.

(3) Water reducing admixtures and water reducing, retarding admixtures shall conform to the requirements of ASTM C 494.

(4) Super plasticizers shall conform to the requirements of ASTM C 494, Type F or G.

(d) Fly Ash: Fly ash shall meet the requirements of ASTM C 618, Class C. Fly ash is approved for use in pavements only and not in structures.

(e) Ground granulated Blast Furnace slag shall meet the requirements of ASTM C 989.

(f) Expansion Joint Filler:

(1) Filler shall be clear-heart redwood, clear all-heart western red cedar, Idaho white pine, western white spruce, northern white pine, sugar pine, western hemlock, white fir, or other material approved by the Director.

(2) The dimensions shall be as specified with a tolerance of 1/16 inch in thickness, 1/8 inch in depth, and plus or minus 1/4 inch in length. The load required to compress the material in an oven dry condition to 50% of its original thickness shall not exceed 1,800 psi.

(g) Joint Sealing Compound: Joint sealing compound shall meet all of the requirements as stated below, heated and applied in strict conformance with manufacturer's recommendations.

(1) Hot Poured Asphalt Mineral Filler: Asphalt mineral filler shall be homogenous and shall be composed of asphalt and mineral filler. The asphalt shall be free from impurities. Asphalt mineral filler shall conform to the following requirements:

PROPERTY	AASHTO TEST METHOD	REQUIREMENT	
		MINIMUM	MAXIMUM
Softening Point, Ring and Ball Method, ^{o}F	T 53	125	145
Penetration at 32^{o}F, 200 grams, 60 seconds	T 49	15	--
Penetration at 77^{o}F, 100 grams, 5 seconds	T 49	50	70
Ductility at 77^{o}F, cm	T 51	15	--
Asphalt, %	T 44	45	55
Mineral Filler, %	T 44	45	55
Water, %	T 55	--	2

(2) Hot Poured Elastic Asphaltic Type: This sealer shall conform to AASHTO Designation M 173, except the pour point test will be performed only as deemed necessary. Materials shall be applied in accordance with the sealer manufacturer's recommendations.

(3) Hot Poured Catalytically Blown Asphalt: Catalytically blown asphalt shall be uniformly blended with 10% diatomaceous earth filler which passes the No. 325 sieve. It shall form a suitable joint and crack sealer which may be melted to pouring consistency in a regular asphalt kettle at a temperature of 400°F to 485°F.

The material shall conform to the following requirements:

PROPERTY	AASHTO TEST METHOD	REQUIREMENT	
		MINIMUM	MAXIMUM
Penetration at 77°F, 100 grams, 5 seconds	T 49	68	88
Penetration at 32°F, 200 grams, 60 seconds	T 49	38	--
Penetration at 115°F, 50 grams, 5 seconds	T 49	--	160
Softening Point, Ring and Ball Method, °F	T 53	175	200
Flash, Cleveland Open Cap Method, °F	T 48	500	--
Specific Gravity, 77/77 %F	--	1.02	--
Ductility at 77°F, 5 cm/minute, cm	T 51	5	--
Flow, 140°F, cm	T 187	8	0.5
Ash Weight, %	T 111	8	20
Shock Test, 30°F	M 190-5.3.1	No Cracking	

(4) Cold Applied Sealing Compound: The Contractor may use cold applied sealing compound such as silicon sealants. Silicon rubber base joint sealing compound shall conform to Federal Specifications TT-S-001543A for Class A sealants.

(f) Metal parting strips used to form keyed joints shall be 16-gauge galvanized steel.

(g) Reinforcing Steel:

(1) Reinforcing bars shall conform to "Specifications for Billet-Steel Bars for Concrete Reinforcement" (ASTM A 615), "Specifications for Deformed Rail-Steel Bars for Concrete

Reinforcement" (ASTM A 616), "Specifications for Deformed Rail-Steel Bars for Concrete Reinforcement with 60,000 psi Minimum Yield Strength," or "Specifications for Axle-Steel Bars for Concrete Reinforcement" (ASTM A 160). Deformations for deformed bars shall conform to "Specifications For Deformations for Deformed Steel Bars for Concrete Reinforcement" (ASTM A 305).

(2) Bar and rod mats for concrete reinforcement shall conform to "Specifications for Fabricated Steel Bar or Rod Mats for Concrete Reinforcement" (ASTM A 124).

(3) Wire for concrete reinforcement shall conform to "Specifications for Cold-Drawn Steel Wire for Concrete Reinforcement" (A.S.T.M. A 82).

(4) Welded wire fabric for concrete reinforcement shall conform to "Specifications for Welded Steel Wire Fabric for Concrete Reinforcement" (A.S.T.M. A 185) except that the weld-shear strength requirement of Section 5b of those specifications shall be extended to include a wire size differential up to and including six gauge.

(5) When placed, all reinforcement shall be free from dirt, oil, paint, grease, mill scale, loose or thick rust, or other deleterious substances. When bending is required, it shall be accurately done. All reinforcement shall be placed in the exact positions shown on the plans. Reinforcement shall be securely held in position by wiring and blocking it from the forms and by wiring it together at intersections so that it will not be displaced during depositing and compacting of the concrete.

(h) Curing compound shall be a white pigmented, impervious membrane conforming to the requirements of ASTM C 309, Type 2.

(i) Tie bars shall be deformed concrete reinforcing steel conforming to ASTM A 615, Grade 40.

(j) Dowels and dowel assemblies shall be as shown on the plans and shall conform with the requirements of Subsection C601.16.

(k) Load transfer devices shall consist of approved dowel bar assemblies, either painted or plastic coated (see standard drawings).

(1) Dowel Bars: Dowel bars shall be plain bars conforming to ASTM Designations A 615, A 616, A 617, and their supplementary requirements. Paint for dowel bars shall conform to AASHTO Designation M 72.

Plastic-coated dowel bars shall be undercoated with an adhesive and given an outer coat of extruded polyethylene plastic in accordance with the coating requirements of AASHTO Designation M 254 and the following:

Adhesive Undercoating:

Adhesive Thickness 3 to 10 mils

Outer Coating:

Coating Material	High Density Polyethylene
Coating Thickness	14 to 20 mils
Total Thickness of Adhesive:	
Undercoating and Outer Coating	20 to 30 mils

(2) Dowels shall have a uniformly round cross-section and shall be saw-cut, smooth and free of burrs, projections, and deformations. Dowels shall be coated with one coat of an approved paint and thoroughly coated with an approved lubricant. In lieu of painted and lubricated dowels, plastic-coated dowel bars may be used. Plastic-coated dowel bars may be placed by approved mechanical devices equipped with suitable means to control proper depth and alignment of the dowel bars. Bars shall be positioned parallel to the pavement centerline and surface. Bars shall be firmly held in position by the mechanical device until concrete has been thoroughly consolidated around the bars. Painted and greased dowel bars shall be placed in approved metal dowel assemblies. An approved sleeve shall be furnished with each dowel bar used in expansion joints. The sleeve shall fit the dowel bar tightly and the closed end shall be watertight.

C601.05 FORMS:

(a) Straight-sided forms shall be made of metal having a thickness of not less than 7/32" and shall be furnished in sections not less than 10' in length. On curves with a radius greater than 150', straight forms of shorter lengths will be permitted. Forms shall have a depth not less than the specified edge thickness of the pavement and a base width at least 0.8 of the depth, except as otherwise approved by the Director.

Flexible or curved forms of proper radius shall be used on curves of a 150' radius or less and shall be of a design acceptable to the Director. Forms shall be provided with adequate devices for secure setting. Flange braces shall extend outward on the base not less than two-thirds the height of the forms. Forms with battered top surfaces and bent, twisted or broken forms shall be removed from the work. Repaired forms shall not be used until inspected and approved.

When approved by the Director, built-up forms may be used; however, the built-up forms shall not exceed 2". No limitation will be made on the use of built-up forms or the amount of build-up where the total area of pavement of any specified thickness on the project is less than 2,000 square yards. The top face of the form shall not vary from a true plane more than 1/8" in 10' and the upstanding leg shall not vary more than 1/4" from the vertical. The forms shall contain provisions for locking the ends of abutting form sections together tightly and for secure setting.

(b) Alignment and grade elevation of forms shall be checked and corrections made by the Contractor prior to placing concrete. When any form has been disturbed or any grade has become unstable, the form shall be reset and rechecked.

(c) Form removal shall be done carefully without damage to green concrete and in no case less than 12 hours after placing concrete. Holes or voids in surfaces shall be immediately filled with 1:2 mortar and floated smooth. Formed edges shall be cured after removal of forms.

C601.06 JOINTS AND REINFORCEMENT:

(a) Expansion Joints:

(1) Expansion joints should be 3/4" in thickness and will have smooth dowel bar assemblies. Dowels should be sized and spaced in accordance to the standard plans.

(2) Expansion joints shall be placed at all intersections and points of curvature; joints shall not exceed 300' center to center spacings.

(b) Contraction Joints:

(1) Contraction joints will have smooth dowel bar assemblies.

(2) Doweled contraction joint assemblies shall be placed at maximum 20' centers and at a minimum 10' centers. Dowels shall be sized and spaced according to the standard plans.

(c) Longitudinal Joints:

(1) Longitudinal joints shall be spaced so that pavement widths do not exceed 14'. Joints shall be formed by parting strips and doweled with deformed tie bars in accordance with the standard plans.

(2) Irregular slopes of pavement, cul de sacs and intersections shall be doweled in panels no larger than 14' on any side. They shall be formed by parting strips and doweled with the same deformed tie bars as above.

C601.07 CONCRETE PROPERTIES AND PROPORTIONS OF MATERIALS:

(a) The Contractor shall submit an appropriate mix design to the designated testing laboratory. The mix design shall be reviewed and forwarded to the Contractor and consulting engineer within 48 hours of receipt.

(b) The specified 28-day compressive strength (f'_c) shall be a minimum of 4,000 psi or as noted on the plans.

(c) Concrete shall have a minimum cementitious content of 500 pounds per cubic yard, be designed with a water reducing admixture, and have a maximum slump of 4 inches.

(d) High early strength concrete shall have a minimum cementitious content of seven sacks and be designed to provide a minimum strength of 3000 psi before the pavement can be opened to traffic where the pavement thickness exceeds nine inches, else a minimum strength of 4,000 psi

before the pavement can be opened to traffic. Additional test cylinders should be cast at the time of placement.

(e) Fly ash may be substituted for cement at the ratio of one pound of fly ash for each pound of cement up to a total of 150 pounds of fly ash per cubic yard of concrete in accordance with the approved mix design. Slag cement may be used to replace up to ½ of the total cementitious content.

(f) Concrete with a temperature of 95^{o}F or greater at the time of placement, or concrete not deposited within one-and-one-half hours after initial injection of the water to the mix, shall be rejected. Any deviations from the above requirement shall be verified for strength by additional cylinders at the expense of the Contractor.

C601.08 CONCRETE MIXING AND DELIVERY:

(a) Concrete mixing shall be in accordance with the requirements of ACI 304R-00.

(b) Concrete delivery shall be in accordance with the requirements of ASTM C 94.

C601.09 PLACING AND FINISHING:

(a) Concrete may be placed and finished by machine. Concrete shall be placed between the forms in such a manner as to avoid segregation, avoid damage to forms and joints, and avoid unnecessary movement once it has been placed.

(b) The subgrade or base course shall be brought to a proper cross-section. High areas shall be trimmed to proper elevation. The finished grade shall be maintained in a smooth and compacted condition until the pavement is placed. No concrete shall be placed until the subgrade or base course has been approved.

(c) The subgrade or base course shall be uniformly moist when concrete is placed. If it becomes too dry, the subgrade or base course shall be sprinkled, but the method of sprinkling shall not be such as to form mud or pools of water.

(d) Concrete Placement:

(1) Concrete shall be deposited on the grade in such a manner as to require as little rehandling as possible. All equipment shall be designed and operated so as to assure placement and spreading of concrete without segregation. Placement shall be continuous between transverse joints without the use of intermediate bulkheads. Necessary hand-spreading shall be done with shovels or other approved tools, excluding rakes.

(2) Concrete shall be consolidated by use of a vibrating screed or internal vibrators approved by the Director.

(3) Concrete shall not be placed on a frozen subgrade when the air temperature is below freezing, or when the air temperature is expected to go below 32^{o}F within 12 hours with a minimum concrete temperature of 50^{o} F.

(4) The roadway pavement shall be of the size and shape shown on the plans including integral curb. It shall consist of one course of concrete with joints, dowels, etc., as called for in the plans.

(5) Final strike-off, consolidation and finishing shall conform to the requirements of Subsection C601.09.e, except metal tine texturing will not be required. The surface texture shall be a broom finish.

(6) Tolerance for surface smoothness shall be 1/4" in 10', except at high and low points and utility structures in the street.

(7) If split slab construction is used and not slip formed, forms on each side of the slab will be required. The side of the slab to be joined during a later placement will have tie bars. Caution shall be exercised in removing the form and in straightening the tie bars.

(e) Final Strike Off, Consolidation and Finishing.

(1) Sequence: The sequence of operations shall be the strike off, consolidation floating and removal of laitance, straight edging, and final surface finish.

(2) In general, the addition of water to the surface of concrete to assist in finishing operations will not be permitted unless approved by the Director. If approved, it shall be applied as a fog spray by means of approved spray equipment.

(3) During final surface-finish operations, all areas that are improperly finished shall be refloated and refinished as required.

(4) Concrete adjacent to joints shall be compacted or firmly placed, without voids or segregation, against the joint material. It shall also be compacted and firmly placed under and around load transfer devices, joint assembly units and other features designed to extend into the pavement. Concrete adjacent to joints shall be consolidated.

(5) After concrete has been placed and vibrated adjacent to joints as required, the finishing machine shall be brought forward operating in a manner to avoid damage or misalignment of joints. The finishing machine shall be stopped when the front screed is approximately 8 inches from the joint. Segregated concrete shall be removed from in front of and off the joint. The front screed shall be lifted and set directly on top of the joint and the forward motion of the finishing machine resumed. When the second screed is close enough to permit excess mortar in front of it to flow over the joint, it shall be lifted and carried over the joint. Thereafter, the finishing machine may be run over the joint without lifting the screed or on top of the joint.

(6) Machine-Finishing: Vibrators for full width vibration of concrete paving slabs shall not be operated longer than 15 seconds in one location. If uniform and satisfactory density of concrete is not obtained by the vibratory method at joints, along forms, at structures, and throughout the pavement, the Contractor shall furnish equipment and use methods which will provide pavement conforming to the specifications.

(7) Hand-Finishing: Unless otherwise specified, hand-finishing methods will not be permitted except in the event of a breakdown of the mechanical equipment. Hand methods may then be used to finish the concrete already deposited on grade. When a breakdown occurs in pavement areas not exceeding a width of 16' or irregular in dimension where operations of mechanical equipment are impractical, the pavement may be finished by hand methods.

(8) Concrete, as soon as it is placed, shall be struck off and screeded.

(9) The screed for the surface shall be at least 2 feet longer than the maximum width of slab to be struck off. It shall be of approved design, sufficiently rigid to retain its shape, and constructed of either metal or other suitable material shod with metal.

(10) Consolidation shall be attained by the use of a suitable vibrator or other approved equipment.

(11) In operation, the screed shall be moved forward on forms with a combined longitudinal and transverse shearing motion, moving always in the direction in which the work is progressing and so manipulated that neither end is raised from the side of the forms during the strike-off process. If necessary, this shall be repeated until the surface has a uniform texture, is true to grade and cross-section, and is free from porous areas.

(12) Longitudinal Float Method: The mechanical longitudinal float shall be of a design approved by the Director and shall be in good working condition. The tracks from which the float operates shall be accurately adjusted to the required crown. The float shall be accurately adjusted and coordinated with the adjustments of the transverse finishing machine so that a small amount of mortar is carried ahead of the float at all times. The forward speed shall be adjusted so that the float will lap the distance specified by the area of pavement at least twice. Excessive operation over a given area will not be permitted. Any excess water or soupy material shall be wasted over the side forms on each pass.

(13) Pan Float Method: The Contractor may use a machine composed of cutting and smoothing float or floats suspended from and guided by a rigid frame. The frame shall be carried by four or more visible wheels riding on and constantly in contact with the side forms.

(14) If necessary, following one of the preceding methods of floating, long handled floats, having blades not less than 5' in length and 6" in width, may be used to smooth and fill in open-textured areas in the pavement. Long handled floats shall not be used to float the

entire surface of the pavement in lieu of, or supplementing one of the preceding methods of floating. When strike-off and consolidation are done by hand methods and the crown of the pavement will not permit use of the longitudinal float, the surface shall be floated transversely by means of the long handled float. Care shall be taken not to work the crown out of the pavement during the operation. After floating, any excess water and laitance shall be removed from the surface of the pavement by a straightedge, 10' or more in length. Successive drags shall be lapped one-half the length of the blade.

(15) Straightedge Testing and Surface Correction: After floating has been completed and excess water removed, but while the concrete is still plastic, the surface of the concrete shall be tested for trueness with an accurate 10' straightedge swung from handles approximately 3' longer than one-half the width of the slab. The straightedge shall be furnished and used by the Contractor. It shall be held with the surface in successive positions parallel to the road centerline and the whole area gone over from one side of the slab to the other as necessary. Advance along the road shall be in successive stages of not more than one-half the length of the straightedge.

Any depressions found shall be immediately filled with freshly mixed concrete, struck off, consolidated and refinished. High areas shall be cut down and refinished. Special attention shall be given to assure that the surface across the joints meets with requirements for smoothness. Straightedge testing and surface corrections shall continue until the entire surface is found to be free from observable departures from the straightedge and the slab conforms to the required grade and cross-section.

(16) Final Finish and Texture: Unless otherwise specified, the final finish and texture shall be obtained using a broom in accordance with this subsection. The surface texture shall be a broom finish. It shall be applied when the water sheen has practically disappeared. The broom shall be drawn from the center to the edge of the pavement with adjacent strokes slightly overlapping. The brooming operation shall be so executed that the corrugation produced in the surface shall be uniform in appearance and not more than 1/16" in depth. Brooming shall be completed before the concrete is in such condition that the surface will be torn or unduly roughened by the operation. The surface, thus finished, shall be free from rough and porous areas, irregularities and depressions resulting from improper handling of the broom. Brooms shall be of such quality, size and construction and be so operated as to produce a surface finish meeting the approval of the Director. Subject to satisfactory results being obtained, the Contractor will be permitted to use mechanical brooming in lieu of manual brooming.

(17) Edging at Forms and Joints: After the final finish, but before the concrete has taken its initial set, the edges of pavement along each side of transverse expansion joints, formed joints and transverse construction joints shall be worked with an approved tool and rounded to the radius specified. A well-defined, continuous radius shall be produced and a smooth, dense mortar finish obtained. The surface of the slab shall not be unduly disturbed by tilting the tool during use. Tool marks appearing on the slab adjacent to joints shall be eliminated by brooming the surface. In doing this, the rounding of the corner of the

slab shall not be disturbed. All concrete on top of the joint filler shall be removed. All joints shall be tested with a straightedge before the concrete has set. Corrections shall be made if one side of the joints are higher than the other or if the joints are higher or lower than in adjacent slabs.

C601.10 CURING AND PROTECTING:

(a) Immediately after completion of finishing operations and as soon as marring of concrete will not occur, the entire surface of newly placed concrete shall be covered and cured with a white pigmented impervious membrane.

(b) The Contractor shall have available at the job site, sufficient covering material to cover and properly protect the last hour's pour against the effects of rain. This covering material may be burlap mats, waterproof paper or combined burlap and white polyethylene sheeting. Failure to provide sufficient cover material or to adequately take care of curing requirements shall be cause for immediate suspension of concreting operations.

(c) Curing compound shall be applied under pressure by mechanical sprayers at the rate recommended by the manufacturer. In no case should less than one gallon per 100 square feet of surface area be applied. The spraying equipment shall be the full atomizing type equipped with a tank agitator. At the time of use, the compound shall be stirred continuously by mechanical or other approved means. Hand-spraying odd widths or shapes and on surfaces exposed by the removal of forms will be permitted provided the curing compound has been thoroughly agitated prior to placing it in the hand sprayer. The curing compound shall be applied to the inside faces of joints to be sealed. In split-slab construction, the curing compound shall be applied in such a manner as to prevent the spraying of exposed reinforcing steel.

(d) Upon removal of side forms, the sides of the slabs and curbs exposed shall be protected immediately in such a manner as to provide a curing treatment equal to that provided for the surface.

(e) Curbs not cast integrally with the slab shall be cured in the manner specified above immediately after completion of finishing.

C601.11 OPENING FOR TRAFFIC:

(a) When the concrete strength determined by testing reaches 75% of design strength or 3,000 psi, or when approved by the Director, the street shall be open to traffic.

(b) No traffic shall be allowed on the pavement until all joints have been cleaned and sealed.

C601.12 ACCEPTANCE CRITERIA:

(a) For the purpose of establishing the thickness of concrete pavements or foundation, either plain or reinforced, constructed or specified herein, cores taken by the testing laboratory will be used.

The average thickness of the concrete pavement to be used as a basis for the price to be paid shall be the average thickness of the core drilling from the concrete, representing the area bounded between lines drawn at right angles to the center of the roadway and at a point halfway between any two consecutive cores. Cores will be taken at about the center of each 500 square yards (approximately) of paved lane or a major fraction thereof, with a minimum of one core per lane per block. No less than four cores shall be taken from the pavement or foundation built under any one contract. The following schedule will be used to determine the unit price to be paid for the work:

THICKNESS AS DETERMINED BY CORES	PROPORTIONAL PART OF CONCRETE PRICE ALLOWED
Full specified thickness or greater	100%
0.0 to 0.2 inch or less below specified thickness	100%
0.21 to 0.3 inch below specified thickness	90%
0.31 to 0.4 inch below specified thickness	85%
0.41 to 0.5 inch below specified thickness	80%
0.51 to 0.75 inch below specified thickness	70%
0.75 to 1.0 inch below specified thickness	60%

Should any core show a deficiency of more than 1" below the specified thickness, additional cores will be taken 5' on either side of the deficient core. If both of these cores are within the 1" tolerance, the procedure will be to cut cores in the following order: 25', 50', 100', the same to be measured from the location of the original core found to be deficient in thickness, then at 100' intervals until a thickness within the 1" tolerance is found in both directions.

Any cores required over those specified to establish the average thickness of the pavement or foundation shall be made at the expense of the Contractor. Areas found to be deficient in thickness by more than 1" shall be evaluated by the Director. If, in his judgement, the deficient areas warrant removal, they shall be removed and replaced with concrete of the thickness shown on the plans.

(b) Compressive Strength: Payment for compressive strength shall be paid in accordance with the following table:

PAYMENT (PERCENT OF CONTRACT UNIT PRICE/LOT)[1]	AVERAGE COMPRESSIVE STRENGTH, PSI[3]	
	WITHOUT AIR ENTRAINMENT	WITH AIR ENTRAINMENT
100	4000 & Over	3600 & Over
98	--	--
95	3500 to 3999	3150 to 3599
80	3000 to 3499	3000 to 3149
50 or Remove and Replace[2]	Below 3000	Below 3000
Correct or Remove and Replace[2]	--	--

[1] Payment adjustments shall be cumulative.

[2] At the option of the department after investigation.

[3] At 28 days.

C601.13 MEASUREMENT: The area of all roadway pavements will be determined by actual measurements from back of curb to back of curb and no allowance will be made for curvature of the cross section. Deductions will not be made for the rails of electric and other railroads, nor for subsurface structures in the street occupying less than twelve square feet of area, when these are within the area or areas paved under the contract.

C601.14 PAYMENT: Payment for Portland cement concrete pavement will be on a lot basis, at the contract unit price per square yard, which includes furnishing and placing all materials including tie-bars, dowel bars, joint material and welded wire fabric. If the pavement does not conform to acceptance requirements, payment will be made at an adjusted unit price in accordance with Section C601.12.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C601(54)	Reinforced Concrete Pavement (___" Thick)	Square Yard
C601(55)	Surcharge for High Early Strength (___" Thick)	Square Yard
C601(56)	Reinforced Concrete Bus Pad (___" Thick)	Square Yard

SECTION C604
PERVIOUS PORTLAND CEMENT CONCRETE PAVEMENT

C604.01 GENERAL CONSIDERATIONS:

(a) The Contractor shall construct the roadway pavement in substantial conformance with these specifications and in reasonable close conformity with the locations, lines, grades, slopes, thickness, sections and strength shown on the plans and included herein.

(b) Pavement shall be Portland Cement Concrete constructed over an approved base.

C604.02 REFERENCED SPECIFICATIONS:

- Annual Book of ASTM Standards, 2014; American Society for Testing and Materials, Philadelphia, PA.
- Standards of the American Association of State Highway and Transportation Officials (AASHTO).
- American Society of Testing and Materials ASTM C 29 “Test for Unit Weight and Voids in Aggregate.”
- ASTM C 33 “Specification for Concrete Aggregates. ”ASTM C 42 “Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
- ASTM C 117 “Test Method for Material Finer than 75 µm (No. 200) Sieve in Mineral Aggregates by Washing.”
- ASTM C 138 “Test Method for Unit Weight, Yield, and Air Content (Gravimetric) of Concrete.”
- ASTM C 140 “Methods of Sampling and Testing Concrete Masonry Units.”
- ASTM C 150 “Specifications for Portland Cement” (Types I or II only).
- ASTM C 172 “Practice for Sampling Fresh Concrete.”
- ASTM C 260 “Specification for Air-Entraining Admixtures for Concrete.”
- ASTM C 494 “Specification for Chemical Admixtures for Concrete.”
- ASTM C 595 “Specifications for Blended Hydraulic Cements” (Types IP or IS only).
- ASTM C 618 “Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for use as a Mineral Admixture in Portland Cement Concrete.”
- ASTM C 989 “Specification for Ground Granulated Blast-Furnace Slag for use in Concrete and Mortars.”
- ASTM C 1077 “Practice for Laboratories Testing Concrete and concrete Aggregates for use in Construction and Criteria Laboratory Evaluation.”
- ASTM C 1688 “Standard Test Method for Density and Void Content of Freshly Mixed Pervious Concrete.”
- ASTM D 448 “Specification for Standard Sizes of coarse Aggregate for Highway Construction.
- ASTM D 1557 “Tests for Moisture-Density Relations of Soils and Soil Aggregate Mixtures using 10 Pound Rammer and 18-inch Drop”
- ASTM E 329 “Standard Recommended Practice for Inspection and Testing Agencies for Concrete, Steel and Bituminous Materials as used in Construction.”

- ASTM C 1701 **"**Standard Test Method for Infiltration Rate of In Place Pervious Concrete

C604.03 QUALITY ASSURANCE:

(a) Perform work of this section in accordance with ACI 522.

(b) Follow recommendations of ACI 306R when concreting during cold weather.

(c) Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work in this section.

C604.04 CONTRACTOR QUALIFICATIONS:

(a) The Contractor shall employ no less than one National Ready Mixed Concrete Association (NRMCA) Certified Pervious Concrete Craftsman who must be on site, overseeing each placement crew during all concrete placement, or the Contractor shall employ no less than three NRMCA Certified Pervious Concrete Installers, who shall be on site working as members of each placement crew during all concrete placement unless otherwise specified. Alternative documentation of qualifications shall be permitted when approved by the Director. Prior to award of the contract, the placing Contractor shall furnish a statement attesting to qualifications and experience and the following:

(1) A minimum of 3 completed projects, total square footage to exceed 10,000 sf with addresses.
(2) Unit weight acceptance data.
(3) In-Situ pavement test results including void content and unit weight.
(4) Sample of Product (i.e. core or test panel)

(b) If the placing Contractor and concrete producer have insufficient experience with Portland Cement pervious concrete pavement (less than 3 successful jobs), the placing Contractor shall retain an experienced consultant or NRMCA Certified Pervious Craftsman to monitor production, handling, and placement operations at the Contractor's expense.

(c) Test Panels: Regardless of qualification, Contractor is to place, joint and cure two test panels, each to be a minimum of 225 sq. ft. at the required project thickness to demonstrate to the Director's satisfaction that in-place unit weights can be achieved and a satisfactory pavement can be installed at the site location.

(d) Test panels may be placed at any of the specified Portland Cement pervious locations on the project or at another test site. Test panels shall be tested for thickness in accordance with ASTM C 42; void structure in accordance with ASTM C 138; and for core unit weight in accordance with ASTM C140, paragraph 6.3.

(e) Satisfactory performance of the test panels will be determined by:

(1) Compacted thickness no less than ¼" of specified thickness.

(2) Void Structure: 15% minimum; 28% maximum.
(3) Unit weight plus or minus 5 pcf of the design unit weight.
(4) If measured void structure falls below 13% or if measured thickness is greater than ¼" less than the specified thickness of if measured weight falls less than 5 pcf below unit weight, the test panel shall be removed at the Contractor's expense and disposed of in an approved landfill.

(f) If the test panel meets the above-mentioned requirements, it can be left in-place and included in the completed work.

C604.05 PROJECT CONDITIONS:

(a) Protect adjacent work from splashing of paving materials. Remove all stains from exposed surfaces of paving, structures, and grounds. Remove all waste and spillage. Do not damage or disturb existing improvements or vegetation. Provide suitable protection where required before starting work and maintain protection throughout the course of the work. Restore damaged improvements, including existing paving on or adjacent to the site that has been damaged as a result of construction work, to their original condition or repair as directed to the satisfaction of the City, and authority having jurisdiction at no additional cost.

(b) Do not place Portland cement pervious concrete pavement mixtures when the ambient temperature is 40 degrees Fahrenheit or lower, unless otherwise permitted in writing by the Director.

C604.06 CONCRETE MIX DESIGN:

Contractor shall furnish a proposed mix design with proportions of materials prior to commencement of work. The data shall include unit weights determined in accordance with ASTM C 1688.

C604.07 STORMWATER STORAGE/INFILTRATION BEDS:

(a) Coarse aggregates shall meet the size and grading requirements as defined in Standard Sizes of Coarse Aggregate, Table 4, AASHTO Specifications, Part I, 13th Ed., 1982, or later, unless otherwise specified.

(b) Coarse aggregate for groundwater recharge bed shall be 2-1/2" to 1-1/2" uniformly graded Crushed coarse aggregate, with a wash loss of no more than 0.5%, AASHTO size number 2 per AASHTO Specifications, 30th Ed., 2010, or later.

(c) Choker base course aggregate for groundwater recharge bed shall be 1" to 3/8" uniformly graded, crushed coarse aggregate, or approved equal, AASHTO Specifications, 30th Ed., 2010, or later.

(d) Filter fabric shall be Propex PERC™ Pervious Concrete Infiltration Fabric or approved equal.

(e) Impervious liner – shall be Permalon, PLY-X 150, or approved equal.

C604.08 MATERIALS:

(a) Cement. Portland Cement Type I or II conforming to ASTM C 150 or Portland Cement Type IP or IS conforming to ASTM C 595. Slag or Flyash may be used as part of the total cementitious content.

(b) Aggregate. Use #9 (1/4") Washed, crushed limestone coarse aggregate. If other gradation of aggregate are to be used, submit data on proposed material to City for approval.

(c) Admixtures. The following admixtures may be used as needed:

(1) Type A/F Water Reducing – ASTM C 494.
(2) Air Entraining Agent – ASTM C 260. May be used to improve resistance to freeze/thaw cycles.
(3) A viscosity modifier. Used to reduce paste drain down caused by using a dirty aggregate.
(4) Buckeye Cellulose fibers. Dosed at the rate of 3# per cubic yard.

(d) The following admixtures shall be used:

(1) A hydration stabilizer that also meets the requirements of ASTM C 494 Type B Retarding or Type D Water Reducing/Retarding admixtures. This stabilizer suspends cement hydration by forming a protective barrier around the cementitious particles, which delays the particles initial set.
(2) HydroMax® Internal Curing Admixture dosed at the rate of 1.5 oz/cwt of total cementitious material. Should reduce the amount of cementitious material needed as well as the need for a viscosity modifier.
(3) Water: Potable water shall be used.

(e) Proportions:

(1) Cement Content: For pavements subjected to vehicular traffic loading, the total cementitious material shall not be less than 480 lbs. per cu. yd. For other pavement areas not subject to vehicular traffic loading, the total cementitious material shall not be less than 450 lbs. per cu. yd.
(2) Aggregate Content: the volume of aggregate per cu. yd. shall be equal to 27 cu. ft. when calculated as a function of the unit weight determined in accordance with ASTM C 1688. An aggregate/cement ratio range of 4:1 to 4.5:1. A unit weight range of 105 lbs/cu. ft. to 140 lbs/cu. ft. per ASTM C 1688. Voids of 15% to 28%.
(3) Admixtures: Shall be used in accordance with the manufacturer's instructions and recommendations.
(4) Mix Water: Mix water shall be such that the cement paste displays a wet metallic sheen without causing the paste to flow from the aggregate. (Mix water yielding a cement paste with a dull-dry appearance has insufficient water for hydration). Water cement ratios can range from 0.24 to 0.39. Insufficient water results in inconsistency in the mix and poor bond strength. High water content results in the paste sealing the void system

primarily at the bottom and poor surface bond.

C604.09 INSTALLATION:

(a) Subgrade Preparation.

(1) Existing subgrade under bed areas shall NOT be compacted or subject to excessive construction equipment traffic prior to stone bed placement.
(2) Where erosion of subgrade has caused accumulation of fine materials and/or surface ponding, this material shall be removed with light equipment and the underlying soils scarified to a minimum depth of 6 inches with a York rake or equivalent and light tractor.
(3) Bring subgrade of stone recharge bed to line, grade, and elevations required.
(4) Fill and lightly regrade any areas damaged by erosion, ponding, or traffic compaction before the placing of stone.

(b) Recharge Bed Installation.

(1) Upon completion of subgrade work, the Director shall be notified and shall inspect at his discretion before proceeding with recharge bed installation.
(2) Filter fabric, pipe, and recharge bed aggregate shall be placed immediately after approval of subgrade preparation. Any accumulation of debris or sediment which has taken place after approval of subgrade shall be removed prior to installation of filter fabric at no extra cost to the City.
(3) Place PERC™ filter fabric in accordance with manufacturer's standards and recommendations. Adjacent strips of filter fabric shall overlap a minimum of sixteen inches (16"). Secure fabric at least two feet (2') outside of bed and take steps necessary to prevent any runoff or sediment from entering the storage bed. Place impervious liner over geo-textile extending six feet (6') beyond toe of slope face at building face, secure as recommended by manufacturer.
(4) Install coarse aggregate in 6 inch maximum lifts. Lightly compact each layer with equipment, keeping equipment movement over storage bed subgrades to a minimum. Install aggregate to grades required on the drawings.
(5) Install 1" thick choker base course size #57 (AASHTO) aggregate evenly over surface of stone bed, sufficient to allow placement of pavement, and notify Director for approval.
(6) Following placement of bed aggregate, the filter fabric shall be folded back along all bed edges to protect from sediment washout along bed edges. At least a two foot (2") strip shall be used to protect beds from adjacent bare soil. This edge strip shall remain in place until all bare soils contiguous to beds are stabilized and vegetated. In addition, hay bales shall be placed at the toe of slopes which may be adjacent to beds to further prevent sediment from washing into beds during site development. As the site is fully stabilized, excess filter fabric along the bed edges can be cut back to gravel edge.

C604.10 PORTLAND CEMENT PERVIOUS PAVEMENT CONCRETE MIXING, HAULING AND PLACING:

(a) Mix Time. Central mixed concrete shall be mixed for a minimum of one minute after introduction of all materials into mixer. Truck mixers shall be operated at the speed designated as mixing speed by the manufacturer for 75 to 100 revolutions of the drum.

(b) Transportation. The Portland Cement aggregate mixture may be transported by ready mix trucks or dump trucks or mixed on site and should be used within one (1) hour of the introduction of mix water, unless otherwise approved by the Director. This time can be increased to 180 minutes when utilizing the hydration stabilizer specified above at the proper dosage rate, unless otherwise approved by the Director.

(c) Each truck should not haul more than two (2) loads before being cycled to another type concrete, unless delivered by dump truck or if a stabilizing hydration agent is used in the pervious concrete mix design or if field experience proves that there is no significant concrete buildup in concrete mixer after delivery.

(d) Prior to placing concrete, the subbase shall be soaked and in a wet condition (no ponding of water) at time of placement. Failure to provide a moist subbase will result in a reduction in strength of the pavement.

(e) Discharge shall be a continuous operation and shall be completed as quickly as possible. If consolidation occurs during concrete discharge, placement shall be halted and wet concrete removed (this may happen towards the end of some loads).

(f) Concrete shall be deposited as close to its final position as practicable and such that fresh concrete enters the mass of previously placed concrete. The practice of discharging onto subgrade and pulling or shoveling to final placement is not allowed.

(g) Placing and Finishing Equipment. Unless otherwise approved by the Director in writing, the Contractor shall provide mechanical equipment of either slipform or form riding with a following compactive unit that will provide a minimum of 10 psi vertical force. The pervious concrete pavement will be placed to the required cross section and shall not deviate more than +/- 3/8 inch in 10 feet from profile grade.

(h) If placing equipment does not provide the minimum specified vertical force, a full width roller or other full width compaction device that provides sufficient compactive effort shall be used immediately following the strike-off operation.

(i) Strike off the pervious concrete 1/2" to 3/4" above the final grade prior to compaction, if needed, by using either slip-form, form riding vibrating screed, form riding aluminum roller screed or laser screed. Strike off may be done by hand for sidewalks. Care must be taken to avoid filling voids in the concrete.

(j) If vibration, internal or surface applied, is used, it shall be shut off immediately when forward progress is halted for any reason.

(k) The Contractor will be restricted to pavement placement widths of a maximum of fifteen (15') feet unless the Contractor can demonstrate competence to provide pavement placement widths greater than the maximum specified to the satisfaction of the City.

C604.11 CURING:

(a) Curing procedures shall begin immediately following all finishing operations if PerviouShield™ liquid spray on curing compound/densifier is used.

(b) Curing procedures shall be complete within 20 minutes after the final placement operations if polyethylene sheeting is used. The pavement surface shall be covered with a minimum .31 mil thick polyethylene sheet (painters plastic) or other approved covering material prior to final cross rolling of the surface and then covered with a layer of four to six (4 – 6) mil thick polyethylene sheeting. Prior to covering, an evaporative reducer shall be sprayed above the surface when required due to ambient conditions (high temperature, high wind, and low humidity). The cover shall overlap all exposed edges and shall be secured (without using dirt or stone) to prevent dislocation due to winds or adjacent traffic conditions.

(c) Cure Time: Portland Cement Type I, II, or IS – 7 days minimum.

(d) No truck traffic shall be allowed for 10 days (no passenger car/light trucks for 7 days and no pedestrian traffic for 24 hours).

C604.12 JOINTING:

(a) Control (contraction) joints shall be installed as indicated by plans. They shall be installed at a depth of the 1/ 3 to 1/4 the thickness of the pavement.

(b) These joints can be installed in the plastic concrete or saw cut. If saw cut, the procedure should begin as soon as the pavement has hardened sufficiently to prevent raveling and uncontrolled cracking (normally after curing), minimum of 24 hours after placement. Removal of plastic to perform saw cutting will cause pervious concrete to hydrate too quickly (Not a concern if PerviouShield™ is used). If plastic is removed to
accommodate saw cutting, re-hydrating of pervious concrete is required. Walking on pervious concrete too early can damage concrete surface

(c) Transverse constructions joints shall be installed whenever placing is suspended a sufficient length of time that concrete may begin to harden.

(d) Isolation (expansion) joints should be used in structure widths exceeding thirty (30) feet or at seventy five (75) feet on sidewalks or when pavement is abutting slabs or other adjoining structures.

(e) Expansion joint material shall be K-form screed rail or approved equal. To reduce raveling, if transverse or isolation joints are used, or where pervious concrete meets impervious pavement, extra compaction may be necessary.

(f) Additional installation specifications for the pervious concrete provided by the material source and Director shall be followed strictly.

C604.13 PORTLAND CEMENT PERVIOUS PAVEMENT CONCRETE TESTING, INSPECTION, AND ACCEPTANCE:

(a) The City will retain an independent testing laboratory. The testing laboratory shall conform to the applicable requirements of ASTM E 329 "Standard Recommended Practice for Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction" and ASTM C 1077 "Standard Practice for Testing Concrete and Concrete Aggregates for use in Construction, and Criteria for Laboratory Evaluation" and shall be inspected and accredited by the Construction Materials Engineering Council, Inc. or by an equivalent recognized national authority.

(b) The Agent of the testing laboratory performing field sampling and testing of concrete shall be certified by the American Concrete Institute as a Concrete Field Testing Technician Grade I, or by a recognized state or national authority for an equivalent level of competence.

(c) Testing and Acceptance.

(1) A minimum of 1 gradation test of the subgrade is required every 5000 square feet to determine percent passing the No. 200 sieve per ASTM C 117.

(2) A minimum of one test for each load of pervious concrete in accordance with ASTM C 172 and ASTM C 29 to verify unit weight shall be conducted. Delivered unit weights are to be determined in accordance with ASTM C 29 using a 0.25 cubic foot cylindrical metal measure. The measure is to be filled and compacted in accordance with ASTM C 1688. The unit weight of the delivered concrete shall be +/- 5 pcf of the design unit weight.

(3) Test panels shall have two cores taken from each panel in accordance to ASTM C 42 at a minimum of seven (7) days after placement of the pervious concrete. The cores shall be measured for thickness, void structure, and unit weight. Untrimmed, hardened core samples shall be used to determine placement thickness. The average of all production cores shall not be less than ½" less than the specified thickness. After thickness determination, the cores shall be trimmed and measured for unit weight in the saturated condition as described in paragraph 6.3.1 of 'Saturation' of ASTM C 140 "Standard Methods of Sampling and Testing Concrete Masonry Units." The trimmed cores shall be immersed in water for 24 hours, allowed to drain for one (1) minute, surface water removed with a damp cloth, the weighed immediately. Range of satisfactory unit weight values are +/- 5 pcf of the design unit weight.

(4) After a minimum of seven (7) days following each placement, three cores shall be taken in accordance with ASTM C 42. The cores shall be measured for thickness and unit weight determined as described above for test panels. Core holes shall be filled

with concrete meeting the pervious design or other concrete material as permitted by the Director.

(d) Maintenance.

There shall be a maintenance plan submitted to the Director to prevent the clogging of the pervious concrete pavement which shall include periodic testing for flowability by the pervious concrete installer prior to the pervious concrete being opened to service, with flow rates reported in writing to the City and again at six (6), twelve (12) eighteen (18) and twenty-four (24) months and again report the results in writing to the Director. It is the Contractor's responsibility to help the City to develop a maintenance plan. Acceptable methods to restore levels of flowability are either to vacuum or powerwash the pervious concrete sections.

C604.14 PAYMENT: Payment for Portland cement concrete pavement will be on a lot basis, at the contract unit price per square yard, which includes furnishing and placing all materials including tie-bars, dowel bars, joint material and welded wire fabric. If the pavement does not conform to acceptance requirements, payment will be made at an adjusted unit price in accordance with Section C601.12.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C604(54)	Pervious Concrete Pavement (___" Thick)	Square Yard

PART VII - INCIDENTAL CONSTRUCTION

SECTION C701
CULVERTS AND STORM DRAINS

Culverts and storm drains shall conform to all of the requirements of the General Specifications and Standard Plans of the Sewerage & Water Board (S&WB) of New Orleans (the latest revision) except as noted.

C701.01 GENERAL:

(a) The Contractor shall furnish all materials, equipment, labor and supervision to remove the existing deteriorated main, install new mains and fittings, including appurtenances such as tie-ins to existing system, lumber foundation, bedding, backfilling, necessary dewatering and by-passing during the execution of this contract.

(b) All workmanship, material and tests shall conform with Section E of the General Specifications of the S&WB and S&WB Standard Drawing No. 7260-D except as noted herein.

(c) The Contractor shall notify the Chief of Network Engineering of the S&WB in writing not less than three or more than ten working days in advance of starting the job so as to schedule the inspection of the work. Failure to do so prior to starting work will result in the Contractor being required to expose the bedding on all pipe previously installed.

(d) The Contractor may use more than one crew in performing work in various sections of a system at a given time, provided he has the approval of the Director.

(e) The Contractor performing work under this contract shall be required to coordinate his operations with the S&WB and other utilities prior to making any excavation so that the location of their services can be identified. The Contractor shall exercise caution in making excavations to avoid damage to these services and other utilities.

(f) The Contractor will be furnished a list of the locations of water and sewer house connections. It will be the Contractor's responsibility to verify the location of these so as to avoid damage. Furnishing this information should not be construed as a waiver of the Contractor's liability, but rather an attempt on the part of the S&WB to minimize the Contractor's hazard. The existing house connections submitted in the list are from S&WB records and could vary from the actual location. Any damage to the existing water, sewer and drain connections resulting from negligence shall be repaired by the S&WB at the expense of the Contractor. The Contractor is also responsible for damage to other utilities and the property of others.

(g) Existing drain house connections shall be tied into the new mains. No new drain house services shall be installed.

C701.02 INSTALLATION: Where the entire drain line is replaced between manholes, the drain pipe shall be reinforced concrete pipe conforming to Section C of the General Specifications of the S&WB and to the Standard City Plans, unless otherwise noted. Installation of drain lines, including bedding and foundation lumber, shall be in accordance with S&WB Standard Drawings No. D-3809, No. D-3810, No. D-3933 and D-3934.

The new drain lines and house connections, where required, shall be installed at the existing elevations and locations indicated, unless changed by the Director. The Contractor shall schedule his work so that the drain lines and catch basin connections between two manholes are completed before moving to another location (this will minimize the spillage of storm water into an open trench). The Contractor shall isolate the block where the work is in progress by plugging the upstream and downstream manholes. Should the storm water build up to within three feet of the top of the upstream manhole, or if directed by the Director, the Contractor shall pump the water to the downstream manhole or to a nearby catch basin, through bypass pumping. No mains or lines shall be left open overnight; a temporary tie-in shall be made between the end of the new main and the existing, and plugs at manholes shall be removed so as to allow flow to continue until work is resumed.

Backfill material shall be pumped sand and shall be placed at or near optimum moisture content and compacted according to one of the following procedures:

Backfill material shall be placed in layers not to exceed 12 inches. Each layer shall be compacted to a minimum of 95 percent of maximum density using approved mechanical compaction equipment, or:

Backfill material may be placed in layers not exceeding 3 feet by thoroughly flooding and compacting each layer to a minimum of 95 percent maximum density at or near optimum moisture content using approved mechanical compaction equipment, prior to placing a subsequent layer. During placement, backfill materials shall be thoroughly saturated with water and satisfactory drainage of materials shall be provided. The above backfill material compaction procedures shall be applied also for any service connections and point repairs.

Filter cloth around the joints of drain lines shall be non-woven conforming to LaDOTD Specification Section 1019, class B.

C701.03 DRAIN HOUSE CONNECTIONS: All existing drain house connections shall be removed and replaced with new PVC pipe from the new drain line to one (1') foot behind the curb where it will be tied to the existing drain house connection pipe.

The need for replacing existing drain house connections from the back of the curb to the property line (or any point between) shall be determined by the S&WB after field inspection or as indicated on the drawings. The new pipe will be tied to the existing pipe at that point.

If the existing drain line is being removed and not replaced, or if the S&WB determines it is necessary, an alternate method may be utilized by connecting the existing drain house connections

into a PVC collector line located behind the curb and tied into the catch basins or manholes, as directed by the S&WB.

The new house connection pipe may be connected to the new reinforced concrete pipe by drilling the concrete pipe and by using a rubber boot (Kor-n-Seal boot or approved equal) or sand impregnated PVC bell grouted in the concrete pipe, to connect the new PVC pipe.

No bends greater than 45 degrees will be allowed in drain house connection pipe.

No drain house connection shall be installed in the corners of catch basins. All connections shall be in the side or back of the catch basins.

All pipes and fittings shall be approved by the S&WB. The connection of any two dissimilar house connection materials shall be accomplished by the installation of a “No-Hub” coupling consisting of a neoprene sleeve and bushing adapter and two stainless steel bands. The coupling shall be manufactured in strict accordance with Fernco specification, or approved equal.

Where it is necessary to connect the drains to existing manholes, catch basins, or canals, the existing short bell pieces remaining in the wall of the structure shall be inspected. If in bad condition, the short bell pieces shall be broken out and new short bell pieces inserted to the full thickness of the walls and permanently grouted (see S&WB Dwg. 6178-B-6). The annular space between the concrete pipe and the wall of the structure shall be grouted with a type three, high early strength cement, or quick setting EMBECO or similar material.

If a PVC pipe is to be connected to a manhole or other concrete or brick drainage structure, the Contractor shall use a sand-impregnated PVC stub, grouted with cement grout as specified above, for the manhole connection.

Drain house connections shall be backfilled as described herein for drain lines.

C701.04 POINT REPAIRS OF EXISTING DRAIN LINES: Where the existing drain line has to be removed and replaced with new concrete pipe, said pipe fittings shall conform with Section E of the S&WB General Specifications. Bedding and foundation lumber for the drain line shall conform with S&WB drawings No. D-3809, No. D-3910, No. D-3933 and No. D-3934. Bedding and foundation lumber shall extend under the existing pipe for a distance of not less than 12 inches from the end of pipe to insure proper bedding under the coupling.

The Contractor shall make point repairs to the lines at specific locations shown on the drawings and as listed in the schedule of bid prices. Point repairs shall be made by dry type and shall conform to Section XII of NASSCO (National Association of Sewer Service Companies). The Contractor shall make an excavation to expose a basic "ten (10) linear feet" of main per point repair. Any additional footage of repair beyond the ten-foot minimum for each point repair shall be approved by the Director or as indicated on the Drawings as “Beyond point repair”. The Contractor is required to have all materials and equipment on hand prior to the start of excavation so that there will be a

minimum of inconvenience to the residents. All trenches must be backfilled at the end of the day. Backfill will be in accordance with the same as described herein for new drain lines.

For drain point repairs, and for all other drain repairs, the connection of any two dissimilar materials shall be accomplished by the installation of a "no-hub" coupling consisting of a neoprene sleeve and bushing adapter, two stainless steel bands, and stainless steel screws. The coupling shall be manufactured in strict accordance with Fernco coupling specifications, or approved equal.

C701.05 INSPECTION: At the completion of the point repair or replacement of mains between manholes, and prior to final acceptance, the S&WB may inspect the mains with a remote controlled television unit or by visual inspection of large lines. The Contractor will be required to repair, at his expense and in an approved manner, all defects in his workmanship disclosed by these tests and inspections before final acceptance.

C701.06 AS BUILT DRAWINGS: The Contractor shall furnish a set of "as built" drawings upon completion of the work and prior to final inspection. These drawings shall be a legibly marked set of prints of the Contract Drawings, revised to show clearly all field changes.

C701.07 MEASUREMENT: Drain pipes will be measured in place and the length determined by measuring from center to center of manholes, or other subsurface structures of which they form a part. If the drain line is connected to a square or rectangular manhole, the measurement will be to the center of the manhole. If the drain line is connected to a box canal wall, the measurement will be to the face of the wall.

C701.08 PAYMENT: Payment for the accepted quantities will be made at the contract unit price.

(a) Payment for reinforced concrete pipe shall be made at the contract unit price, per linear foot of the types and sizes specified, including excavation, removal of existing pipe (if any), foundation lumber, bedding, engineering fabrics, backfill, complete shoring, pumping as necessary and tie-ins to manholes and catch basins. (Bid Items C701(53) or C701(54)).

(b) Payment for reinforced concrete wye in a new drain line shall be made at the contract unit price per Item No. C701(59) and shall be in addition to the payment per linear foot for reinforced concrete drain pipe.

Payment for reinforced concrete wye in an existing drain line shall be made at the contract unit price per Item No. C701(65), including a ten (10') foot point repair (total length including wye),couplings, excavation, removal of existing pipe, granular bedding, engineering fabric, backfill, foundation lumber, shoring, and pumping as necessary and saw cutting of existing pipe. (Bid Items (C701(53) or C701(54)).

(c) Payment for reinforced concrete tee shall be made at the contract unit price, per Item No. C701(66).

(d) Payment for point repairs of existing drain lines, up to ten (10') feet shall be made at the contract unit price, per each of the sizes specified, including excavation, foundation lumber, bedding, engineering fabrics, backfill, complete shoring and pumping, as necessary, pipe fittings, couplings, saw cutting existing pipe, removal of existing pipe, and tie-ins to existing manholes if required as per Item No. C701(68). Payment for point repair beyond ten (10') feet shall be made at the contract unit price per linear foot, including the above work, as per Item No. C701(69).

(e) Drain house connections from new drain line to back of curb shall be paid per each including, fittings, tie-ins, excavation, backfilling, removal of existing pipe (if any) and drilling the reinforced concrete pipe, per Item No. C701(70). Payment for drain service line tie-ins beyond back of curb will be made by linear foot of tie-in service lines, including the removal of existing pipes, fittings, and backfill (Item C701(71)). PVC collector line to catch basins for drain house connections shall be paid per linear foot, including, fitting tie-ins to catch basins, excavation, and backfilling per item No. C701(72).

Payment will be made under:

ITEM NUMBER	PAY ITEM	PAY UNIT
C701(53)	Reinforced Concrete Pipe (Size)	Linear Foot
C701(54)	Reinforced Concrete Arch Pipe (Size)	Linear Foot
C701(57)	Yard Drain Service Line (Size & Type)	Linear Foot
C701(58)	Reset Culvert Pipe (Size)	Linear Foot
C701(59)	Reinforced Concrete Wye or Arch Equivalent – New (size)	Each
C701(65)	Reinforced Concrete Wye or Arch Equivalent – Existing (size)	Each
C701(66)	Concrete Tee (size)	Each
C701(67)	Clean and Flush Culvert	Linear Foot
C701(68)	Point Repair of Existing Drain Lines up to Ten (10') Feet (size)	Each
C701(69)	Point Repair of Existing Drain Lines Beyond Ten (10') Feet (size)	Linear Foot
C701(70)	Drain House Connection (size) From New Drain Line to Back of Curb	Each
C701(71)	Drain House Connection Beyond Back of Curb (Size)	Linear Foot
C701(72)	Collector Line to Catch Basins for Drain House Connections (Size)	Linear Foot
C701(73)	Abandoning Existing Drainage Pipes in Place and Fill with Flowable Material (size)	Linear Foot
C701(74)	Removal and Disposal of Existing Drain Lines (Not in Same Trench) Including Backfilling with River Sand and Compaction	Linear Foot

SECTION C702
MANHOLES, CATCH BASINS, DROP INLETS, AND CLEAN-OUTS

C702.01 DESCRIPTION: This work consists of the construction and adjustment of manholes, catch basins, drop inlets, and cleanouts in accordance with the General Specifications and Standard Plans of the Sewerage & Water Board of New Orleans (latest revision), and in conformity with lines shown on the plans or established. The surrounding structure shall be backfilled and compacted in accordance with Subsection C701.02.

C702.02 CONSTRUCTION REQUIREMENTS:

(a) MANHOLES: (No. 1, No. 2, No. 3, Standard Drain Manholes, Special Drain Manholes and Special Conflict Manholes.) Manholes shall be built according to the Standard Plans of the S&WB and/or as indicated on the plans.

(b) CATCH BASIN ADJUSTMENTS: (Type A, type B and type C.)

(1) Type A: The work consists of making slight adjustments in alignment and raising or lowering the elevation of the casting, no additional walls are required.

(2) Type B: The work consists of building a wall inside the wall and outside of the front wall of the basin or racking over or drawing in the rear wall and building a brick wall outside of the front of the front wall or vice versa, and preserving and reusing the footing courses and subgrade lumber and the side walls.

(3) Type C: The work consists of removing the basin completely and rebuilding it either at the same location or at a different location, as directed.

(c) CATCH BASINS AND DROP INLETS: (No. 1, Double No. 1, No. 2, No. 3, No. 4, No. 5, Standard Catch Basin, Standard Drop Inlet, Single and Double Mountable Catch Basins.)

The structures shall be built conforming to the Standard Plans of the S&WB.

(d) REHABILITATE EXISTING CATCH BASIN: The work consists of reshagging inside, stopping leaks and resealing where required.

(e) REHABILITATE EXISTING MANHOLE: The work consists of reshagging inside, stopping leaks and resealing where required.

(f) TAP-IN TO EXISTING DRAIN LINE: The work consists of breaking out the existing drain line and tapping the new drain line into it, including stub.

(g) ADJUST MANHOLE OR DROP INLET: The work consists of adjusting manholes or drop inlets to grade with brick and mortar where directed.

(h) SIX (6") INCH DRAIN CLEANOUT FOR ROOF DRAIN: The work consists of installing new a cleanout box with casing for roof drain in accordance with plans.

(i) CLEANOUT BOX IN EXISTING CULVERT AND NEW CULVERT: The work consists of installing a new brick cleanout box with casting in accordance with the plans.

C702.03 MEASUREMENT: New and adjusted manholes, catch basins, drop inlets and clean-outs will be measured by the pay unit. New or rehabilitated manholes will be measured by vertical foot height. The height of manholes will be determined by measuring from the invert of the manholes to the top of the cast iron cover. Excavation and backfill shall not be measured for payment.

C702.04 PAYMENT: Payment for the accepted quantities will be made at the contract unit price.

(a) Payment for "standard manhole" shall be made at the contract unit price per foot height, including excavation, granular bedding and backfilling.

(b) Payment for "catch basin adjustment" shall be made at the contract unit price per each, including excavation, granular bedding and backfilling. For type C, the price shall include the risk of breakage and replacement of any casting and the cost of bricking up the front grating where necessary, so as to make such catch basins conform to a No. 1 standard catch basin.

(c) Payment for "catch basin & drop inlet" shall be made at the contract unit price per each, including excavation, granular bedding and backfilling.

(d) Payment for "rehabilitate existing catch basin" shall be made at the contract unit price per each.

(e) Payment for "rehabilitate existing manhole" shall be made at the contract unit price per foot height.

(f) Payment for "tap-in to existing drain line" shall be made at the contract unit price per each.

(g) Payment for "adjust manhole or drop inlet up to six (6") inches with brick and mortar" shall be made at the contract unit price per each, including the base material (Portland cement concrete or asphaltic) to be replaced around the manhole. Payment for "adjust manhole or drop inlet over six (6") inches" shall be made at the contract unit price per foot height, or any fraction of a foot, including the above work.

(h) Payment for "six (6") inch drain cleanout for roof drain" shall be made at the contract unit price per each, including excavation and backfilling.

(i) Payment for "cleanout box in existing culvert" and in "new culvert" shall be made at the contract unit price per each, including excavation and backfilling.

Payment will be made under:

ITEM	PAY ITEM	PAY UNIT
C702(52)(J)	No. 1 Standard Drain Manhole	Foot Height
C702(52)(K)	No. 2 Standard Drain Manhole	Foot Height
C702(52)(L)	No. 3 Standard Drain Manhole	Foot Height
C702(52)(M)	Special Drain Manhole	Each
C702(52)(N)	Special Conflict Manhole	Each
C702(53)(J)	Type A Catch Basins Adjustment	Each
C702(53)(K)	Type B Catch Basins Adjustment	Each
C702(53)(L)	Type C Catch Basins Adjustment	Each
C702(53)(M)	No. 1 Standard Catch Basin	Each
C702(53)(N)	Double No. 1 Catch Basin	Each
C702(53)(O)	No. 2 Standard Catch Basin	Each
C702(53)(P)	No. 3 Standard Catch Basin	Each
C702(53)(Q)	No. 4 Standard Catch Basin	Each
C702(53)(R)	No. 5 Standard Catch Basin	Each
C702(53)(S)	24" X 30" Clear Opening Standard Drop Inlet	Each
C702(53)(T)	Single Mountable Catch Basins	Each
C702(53)(U)	Double Mountable Catch Basins	Each
C702(53)(V)	Rehabilitate Existing Catch Basin	Each
C702(54)(I)	Rehabilitate Existing Manhole	Foot Height
C702(54)(K)	Tap-in to Existing Drain Line	Each
C702(54)(A)(1)	Adjust Manhole or Drop Inlet up to 6" with Brick and Mortar	Each
C702(54)(A)(3)	Adjust Manhole or Drop Inlet over 6" with Brick and Mortar	Foot Height
C702(55)(C)	6" Drain Cleanout for Roof Drains	Each
C702(56)	Clean Out Box Existing Culvert	Each
C702(57)	Clean Out Box New Culvert	Each

SECTION C706
DRIVEWAYS AND SIDEWALKS

C706.01 DRIVEWAYS:

(a) Driveways shall be constructed of such lengths and widths and at such points as shown on the plans or as may be designated by the Director.

(b) Where driveways are to be constructed within the sidewalk area, where lip concrete curb is installed, the details of the driveways shall be as shown on Standard Plans for Standard Mountable Driveway or Heavy Duty Mountable Curb Driveway, as specified in the proposal.

(c) All standard driveways shall be six (6") inches and all heavy duty driveways shall be eight (8") inches in thickness. Driveways shall be constructed of Portland cement concrete having a minimum compressive strength of three thousand (3,000) psi. at twenty-eight (28) days. The minimum cement content shall be five and one-half (5-1/2) bags per cubic yard of concrete. The maximum water content, including free water in the aggregate, shall not be greater than six (6) gallons per bag of cement. The consistency of the concrete shall be such as to have a slump of from two (2") inches to four (4") inches.

(d) Driveways shall be reinforced with 6 X 12 – W7.5 X W6.5 welded wire fabric weighing seventy-seven (77) pounds per hundred (100) square feet.

(e) Expansion joints shall be provided where shown on Standard Plans or as may be otherwise directed.

(f) Weakened planes shall be formed by a jointing tool or other acceptable means. Weakened planes shall extend into concrete for at least 1/4 of the depth and shall be approximately 1/8 inch wide.

A longitudinal weakened plane shall be formed along the centerline of drives more than 16 feet wide, and transverse weakened planes shall be formed at not more than 16-foot intervals.

(g) The subgrade on which the driveways are to rest shall be thoroughly rolled or tamped so as to be uniformly compacted and solidified. The finished grade shall be smooth, even, well-graded and exactly parallel to the finished surface of the driveway.

(h) Immediately after placing and tamping the concrete in place, it will be brought to the established grade by means of a strike board. Finishing shall be completed by use of a soft-haired brush, moved lightly over the surface in the direction of the width of the driveway. Joints are to be straight and square, in good alignment and edges finished by a joiner, so as to avoid sharp corners.

C706.02 SIDEWALKS AND RAMP ACCESSIBILITY:

Sidewalks and ramps shall comply with the most current regulations for Titles II and III of the Americans with Disabilities Act of 1990 (ADA) and applicable accessibility standards published by

the Department of Justice (the 2010 ADA Standards for Accessible Design, “2010 Standards”, or later).

(a) An ADA curb ramp is a short ramp cutting through a curb or built up to it to provide an accessible path of travel.

(1) On a curb ramp, the running slope is the slope in the direction of pedestrian travel on the ramp run and must be 8.33 percent (1:12) or less. Where provided, curb ramp flares shall not be steeper than 1:10.

(2) On a curb ramp, the cross slope is the slope perpendicular to [across] the direction of pedestrian travel on the ramp run and the cross slope of the ramp run itself may not exceed 2 percent (1:50).

(3) The ramp, or ramp run, must be at least 48 inches wide, not including the flared sides. The ramp run must have detectable warnings – i.e., dome-shaped bumps – that extend the full width and depth of the ramp.

(4) Transitions from the ramp to the walkway, gutter, and street must be flush (level) and free of abrupt level changes. The gutter must have a slope of no more than 5 percent (1:20) toward the ramp.

(5) Landings shall be provided at the tops of curb ramps. The minimum landing clear length shall be 48 inches. The landing clear width shall be at least as wide as the curb ramp, excluding flared sides, leading to the landing.

(6) Diagonal or corner type curb ramps with returned curbs or other well-defined edges shall have the edges parallel to the direction of pedestrian flow. The bottom of diagonal curb ramps shall have a clear space of 48 inches minimum outside active traffic lanes of the roadway. Diagonal curb ramps provided at marked crossings shall provide the 48 inches minimum clear space within the markings. Diagonal curb ramps with flared sides shall have a segment of curb 24 inches long minimum, located on each side of the curb ramp and within the marked crossing.

(b) Raised islands in crossings shall be cut through level with the street or have curb ramps at both sides. Each curb ramp shall have a level area 48 inches long minimum by 48 inches wide minimum at the top of the curb ramp in the part of the island intersected by the crossings. Each 48 inch minimum by 48 inch minimum area shall be oriented so that the 48 inch minimum length is in the direction of the running slope of the curb ramp it serves. The 48 inch minimum by 48 inch minimum areas and the accessible route shall be permitted to overlap.

(c) The running slope of sidewalks must be 5 percent (1:20) or less. The cross slope of sidewalks must be 2 percent (1:50) or less. The clear width of sidewalks shall be at least 48 inches and a sidewalk with a clear width of less than 60 inches shall provide passing spaces at intervals of 200 feet maximum. If the longitudinal slope of the sidewalk exceeds 1:20, it is considered a ramp and a level landing must be provided for every 30-inch change in elevation.

C706.03 PORTLAND CEMENT CONCRETE SIDEWALK OR BANQUETTE PAVEMENT:

(a) Portland cement concrete sidewalk or banquette pavement shall be of such widths and fixed at such elevations as may be stipulated in the proposal and Special Specifications, or may be otherwise designated by the Director. They shall consist of a one course Portland cement concrete pavement four (4") inches in thickness.

(1) The concrete shall have a minimum compressive strength of three thousand (3,000) psi. at twenty-eight (28) days. The minimum cement content shall be five and one-half (5-1/2) bags per cubic yard of concrete. The maximum water content, including free water in the aggregate, shall not be greater than six (6) gallons per bag of cement. The consistency of concrete shall be such as to have a slump of from two (2") inches to four (4") inches.

(2) Sidewalks or banquettes shall be reinforced with 6 X 6 – W2.9 X W2.9 wire mesh weighing forty-two (42) pounds per hundred square feet.

(b) In preparing the subgrade on which the Portland cement concrete sidewalk or banquette pavement will be placed, all soft and spongy places shall be removed and all depressions filled with suitable materials which shall be thoroughly compacted in layers not exceeding six (6") inches in thickness. The subgrade shall be thoroughly tamped until it is brought to a firm, unyielding surface. It shall have a slope in conformity with the slope of the finished surface of the Portland cement concrete sidewalk or banquette pavement.

When the Portland cement concrete sidewalk or banquette pavement is to be constructed over an old path composed of gravel or cinder, the old path shall be entirely loosened, the material spread for the full width of the subgrade and compacted as specified.

(c) All fills shall be made in a manner satisfactory to the Director. The use of muck, quicksand, soft clay, spongy or perishable material is prohibited. The top of all fills shall extend at least two (2') feet beyond the sidewalk or banquette pavement on each side and the sides shall have a maximum slope not greater than one (1) vertical to one and one-half (1-1/2) horizontal before any Portland cement concrete sidewalk or banquette pavement will be allowed to be placed thereon.

(d) Concrete shall be of the strength and consistency herein before described. The method of mixing and placing shall be in conformance with the requirements for Subsections C601.20 and C601.21, Portland cement concrete pavement. Concrete that does not flush readily shall be removed immediately from the grade and not re-used, except that the coarse aggregate can be salvaged by washing.

(e) After mixing, the concrete shall be handled rapidly and the successive batches deposited in a continuous operation completing individual sections to the required depth and width. The forms shall be filled and the concrete struck off and tamped. The method of placing the various sections shall be such as to produce a straight clean joint between them so as to make each section an independent unit. If dirt, dust or other foreign substances collect on the surface, they shall be removed before the trowelling is started.

(f) After the concrete has been tamped in accordance with subsection C706.02 (e), it will be brought to the established grade by means of a strike board, and it will then be worked with a wood float in a manner which will thoroughly compact it and provide a surface free from depressions or irregularities of any kind. Excessive working shall be avoided. In no case shall dry cement and sand be sprinkled on the surface. The surface edges of all slabs shall be rounded to a radius of one-half (1/2") inch.

(g) Portland cement concrete sidewalk or banquette pavement shall be divided into blocks of such dimensions, by means of a joiner or grooves, as shown on the Standard Plans or as the Director may designate. Weakened planes shall be formed by a jointing tool or other acceptable means. Weakened planes shall extend into concrete for at least one-quarter (1/4") inch of the depth and shall be approximately one-eighth (1/8") inch wide. Spacing of weakened planes shall be equal to the width of the sidewalk. Transverse expansion joints shall be made at intervals of about ninety (90') feet and constructed in accordance with the standard plans.

All expansion joints shall be carefully made so as to be truly perpendicular to the surface of the sidewalk or banquette pavement and at right angles to the edge of same. The surface of the concrete adjacent to expansion joints shall be finished with a wood float, which is divided through the center and which will permit finishing on both sides of the joint at the same time. An expansion joint shall also be provided adjacent to solid walls of masonry, behind curbs, at intersections and at footlaps. Where posts or poles fall within the limit of the sidewalk or banquette pavement, an expansion joint not less than one-half (1/2") inch in width shall be placed around said posts or poles and filled with joint filler. In the case of expansion joints adjacent to masonry walls, at footlaps and around posts or poles, the joint filler shall not extend above the surfaces of the sidewalk or banquette pavement and any excess filler that so protrudes shall be cut off and made flush with the sidewalk or banquette pavement.

(h) As soon as the finished work has hardened sufficiently to prevent damage, the surface of the walk shall be covered with curing compound. The freshly finished work shall be protected from hot sun and drying winds until it can be covered as above specified. Curing by application of chemicals or some other method of curing may be used upon the approval of the Director. The concrete surface must not be damaged or pitted by raindrops and the Contractor shall provide and use, where necessary, sufficient tarpaulins to completely cover all sections that have been placed within the preceding twelve (12) hours. The Contractor shall erect and maintain suitable barriers to protect the walk from traffic, and any section damaged from traffic or other causes, shall be repaired or replaced by the Contractor at his own expense, in a manner satisfactory to the Director. The walk shall not be opened to traffic until the prescribed curing period has expired.

(i) Portland cement concrete sidewalk or banquette pavement at intersections, including ramps for the handicapped, shall be six (6") inches thick and placed as above specified.

C706.04 BRICK SIDEWALK OR BANQUETTE PAVEMENT:

(a) Brick sidewalk or banquette pavement shall be of such width, grades or elevations as shown on plans or as may be designated by the Director and laid in the manner herein described and as shown on the standard plan.

(b) The surface of the earth upon which the brick sidewalk or banquette pavement will rest shall be first graded and tamped and otherwise prepared as specified for Portland cement concrete sidewalk or banquette pavement.

(c) Five (5") inches of reinforced concrete foundation having a compressive strength of not less than three thousand (3,000) psi. in twenty-eight (28) days shall be poured and tamped. The brick shall be laid on a prepared subgrade, a minimum of a three-eighths (3/8") inch setting bed which is composed of one (1) part cement to three (3) parts sand. Bricks shall be in close contact with each other and thoroughly tamped. After tamping, they shall be thoroughly sprinkled and all joints shall at once be completely filled with grout formed of one (1) part Portland cement concrete to three (3) parts sand. Thereafter, clean, sharp sand shall be evenly spread on the surface to a thickness of approximately one-half (1/2") inch. When the grout has been in place for seventy-two (72) hours or longer, this sand shall be removed and may be re-used at the option of the Contractor.

(d) After completion, the brick sidewalk or banquette pavement shall be closed to traffic and not opened until so directed by the Director. The Contractor will be required to barricade and protect the walk in every way as prescribed and required for Portland cement concrete sidewalk or banquette pavement.

(e) Brick sidewalk or banquette pavement will be paid for by the square yard, at the price bid in the proposal for that item, which price shall include grading and all the materials, reinforced concrete foundation, labor, tools, equipment and service employees used in completing the brick sidewalk or banquette pavement in place as herein described.

C706.05 RELAYING SIDEWALK OR BANQUETTE PAVEMENT:

(a) All sidewalk or banquette pavement relaid shall conform to the requirements herein fixed for new sidewalk or banquette pavement. Where old bricks are not suitable for relaying, they shall be replaced by new brick.

(b) When Portland cement concrete sidewalk or banquette pavement is unavoidably disturbed in executing the work embraced by the specifications, the limits of the area proposed to be disturbed or removed shall be sharply defined by the Contractor with concrete saw made lines and then carefully removed along said lines. Should the surface fracture along irregular lines, a straight line shall be struck and the edge made true. When other sidewalk or banquette pavement is unavoidably disturbed, they shall be restored by the Contractor to the same conditions in which they were before they disturbed them, and for such work, he shall be compensated at the prices bid in the proposal for relaying sidewalk or banquette pavement; no compensation shall be allowed for relaying sidewalk or banquette pavement that has been unnecessarily disturbed.

(c) Relaying sidewalk or banquette pavement shall be paid for by the square yard at the price bid in the proposal for those items, which price shall include all materials, labor, tools, equipment and services employed in taking up the sidewalk or banquette pavement and restoring them to the same condition in which they were before being disturbed, including the grouting of old brick. Exception is made in the case of Portland cement concrete sidewalk or banquette pavement, which price shall include all material, labor, tools, equipment and services employed in taking up and relaying them.

C706.06 MINIMUM SIDEWALK OR BANQUETTE TREATMENT WITHIN THE DOWNTOWN DEVELOPMENT DISTRICT:

This will be in accordance with Section 146-193 of the City Code.

C706.07 MINIMUM SIDEWALK OR BANQUETTE TREATMENT WITHIN THE VIEUX CARRE:

This will be in accordance with Section 146-194 of the City Code.

C706.08 TILE STREET NAMES:

(a) LETTERS OR NUMBERS FOR TILE STREET NAMES: Letters or numbers for tile street names shall be hard, tough, durable, porcelain tile or other material satisfactory to the Director. The letters or numbers shall be block type on tile not less than five and one-half (5-1/2") inches, nor greater than six (6") inches high. The letters or numbers shall not be less than five (5") inches high, of blue or willow green in color, on a white background. Letter or numbers for tile street names shall be installed and oriented so that they may be read by pedestrians approaching the intersection where they are located.

(b) RESETTING TILE STREET NAMES: Existing tile street names shall be salvaged intact by saw-cutting the name out of the concrete in which the tiles are imbedded. The saw-cut shall be located two (2") inches away from the name's perimeter and will extend through the depth of the concrete, usually four (4") inches. The salvaged street name tile shall be reset in the fresh concrete of the sidewalk intersection, flush with the level of the sidewalk and clean of any cement residue.

C706.09 MEASUREMENT: The area of driveways will be determined by surface measurements and no extra allowance will be made for shoulders.

Sidewalk pavements will be paid for by surface measurements and no deduction will be made for subsurface structures occupying less than five (5) square feet of area. Areas under structures encroaching on public property not paved will not be included in the surface measurement.

C706.10 PAYMENT: Payment for concrete driveways, sidewalks or banquette pavement will be made at the contract price per square yard, which includes excavation, installation of expansion joint and welded wire fabric. Granular material for adjustment and removal of existing driveways, sidewalk or banquette pavement shall be paid for in other items.

Payment for "letters or numbers for Tile street names" will be per each tile at the contract unit price.

Payment for "Resetting Tile Street Name" will be per name at the contract unit price.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C706(51)	Concrete Sidewalk (___" Thick)	Square Yard
C706(52)	Concrete Driveway (___" Thick)	Square Yard
C706(54)	Sidewalk at Intersection Including Handicapped Ramps (___" Thick)	Square Yard
C706(55)	Sidewalk in Median Including Handicapped Ramps	Square Yard
C706(56)	Handicapped Ramp (Specify Concrete Brick or Stone)	Square Yard
C706(57)	Brick Sidewalk	Square Yard
C706(58)	Relaying Brick Sidewalk	Square Yard
C706(59)	Stone Sidewalk	Square Yard
C706(60)	Relaying Stone Sidewalk	Square Yard
C706(61)	Letter or Number for Tile Street Name	Each
C706(62)	Resetting Tile Street Name	Each

SECTION C707
CURBS AND GUTTERS

C707.01 INTEGRAL CONCRETE CURB, STRAIGHT OR CIRCULAR: Integral concrete curb shall be either mountable or barrier curb. Concrete curb and barrier curb shall be constructed monolithically with the same materials, having the same compressive strength and placed and cured in the same manner as the concrete in the roadway slab. The dimensions shall be as shown on standard plans. The overall depth shall be determined by the curb exposure, depth of gutterbottom and roadway slab.

(a) The curb forms shall provide for the dimensions specified and must be set to the established grades.

(b) Premoulded joint filler shall be placed and extended through the entire curb section, at those points where joint filler is used in the roadway slab.

C707.02 COMBINED CONCRETE CURB AND GUTTERBOTTOM AND/OR CONCRETE CURB, STRAIGHT OR CIRCULAR:

(a) Combined concrete curb and gutterbottom shall be either combined mountable concrete curb and gutterbottom or barrier concrete curb and gutterbottom. Concrete curb shall be either mountable or barrier. The type of concrete curb or concrete curb and gutterbottom to be provided shall be as shown on plans. The forms to be used shall conform to the requirements of these specifications on "FORMS".

(1) The concrete used shall be mixed with the same materials, having the same compressive strength and shall be cured in the same manner as specified for "Reinforced Concrete Roadway Pavements".

(2) Where it is required to construct concrete curb and gutterbottom, the curb and gutterbottom must be poured monolithically.

(3) Undowelled contraction joints shall be placed through the entire width of the concrete curb or curb and gutterbottom, at no greater than fifteen (15') foot intervals. Contraction joints shall be formed by a jointing tool or other acceptable means, having a 2" depth and 1/4" width and filled with silicone sealant or an approved joint sealant.

Dowelled expansion joints shall be placed at intersections, not to exceed three hundred (300') foot intervals, and/or as indicated on the plans.

Pre-moulded joint filler shall be placed through the entire section of the concrete curb or curb and gutterbottom. The concrete curb and gutterbottom shall be reinforced in accordance with the standard plans.

(4) The forms shall provide for the dimensions specified and must be set to the established grades. After placing, concrete shall be worked with a float, in a manner that will thoroughly compact it and provide a surface free from depressions or irregularities of any kind.

C707.03 CONCRETE GUTTER:

(a) Where the concrete gutter is constructed as a part of combined curb and gutterbottom, it shall conform to the requirements of combined curb and gutterbottom. Jointing shall conform to subsections C601.06(a) and C601.06(b).

(b) Where the concrete gutter is constructed in conjunction with roadway pavement, it shall, unless otherwise specified or directed, be poured monolithically with, become part of, be laid at the same time, in the same manner and have the same compressive strength as concrete roadway foundation, for such roadway pavements. It shall be of the same width indicated on the plans and of such depth as will be equal to the combined thickness of the roadway foundation and the roadway pavement wearing surface.

(c) The subgrade shall meet the requirements for roadway pavement sub-grade.

(d) Immediately after the concrete has been placed, it shall be tamped, struck off and worked with a wood float in a manner to provide a surface free from irregularities and depressions, bringing the mortar to the top. The surface shall then be broomed or brushed with a soft hand broom in the direction of the flow line of the gutter. Surface joints shall be made by a steel joining tool and premoulded joint filler shall be placed and extended through the entire gutter section at those joints where filler is used in the roadway slab or curb.

(e) Curing the gutter shall be similar to that provided for roadway pavement.

C707.04 STONE CURB:

(a) Stone curb shall either be old stone curb or new stone curb as herein specified.

(b) Old stone curb shall be of suitable quality with well-defined face and top, of the depth not less than prescribed for new curb and not less than three (3') feet in length.

(c) New stone curb shall be best North River Blue Stone or Cabin Creek Blue Stone or Granite or similar stone acceptable to the Director, and shall measure five (5") inches in thickness for the remainder of depth, and in lengths of not less than five (5') feet except for closures. It shall be of such depth as may be indicated on the plans or otherwise specified. The top of the curb shall be peen-hammer dressed, and the face for ten (10") inches below the top pointed, so that there will be no protrusions or depressions measuring more than one-half (1/2") inch from a straightedge laid in any direction parallel to the general surface. All ends shall be squared so as to form close-fitting joints. No drill holes will be permitted to show on any exposed surface. All edges shall be well-defined.

(d) Closures shall not be less than two and one-half (2-1/2') feet in length and must not be placed adjacent to catch basins or over fresh excavations or adjacent to one another. No more than three (3) such closures will be allowed between any two fixed points such as circular curb for corners, circular curb for driveways or catch basins.

C707.05 SETTING AND RESETTING STONE CURBS:

(a) Stone curb shall be set to lines and grades indicated on plans, or as may be otherwise directed. The subgrade on which the curb base is to be placed shall be excavated and thoroughly tampered by means of a pneumatic tamper.

(b) After the curb has been set to proper line and grade as above, the Contractor shall place under each curb joint, or as close thereto as may be practical, a concrete pier. These piers and concrete base shall be constructed in accordance with dimensions shown on the detail plans, care being taken that the excavation therefore made prior to the pouring of the concrete is evenly cut and as nearly true to the plans as the character of the excavation materials will permit. Care should be taken also, that all loose material is removed from the finished subgrade of the roadway prior to pouring concrete.

(c) One pier shall be provided under each curb joint except in cases where it is impractical to construct one at said point, as where a drain sewer or gas service is directly under the joint and is sufficiently high to prevent the pier being built to the dimensions shown on the plans. In this case, two (2) piers shall be constructed, one (1) on each side of the curb joint and as close thereto as practical.

(d) After setting curb, the excavated area behind same shall be backfilled by tamping and this filling shall be brought to the top of the back of the curb.

(e) Old stone curb of proper quality and dimensions will be relined and reset at its present location when required by the proposal or special specfications, or it shall be removed to other points within the limits of the project, as may be designated by the Director, and there reset.

(f) The ends of all curb, whether new or old, shall be neatly squared so as to form close-fitting joints. Joint filler one-half (1/2") inch in thickness shall be placed adjacent to catch basins and circular curbs when setting stone curbs. All joints in stone curb shall be thoroughly and neatly pointed with mortar. The joints in the precast concrete curbs shall be neatly filled with a joint filler, one-eighth (1/8") inch thick. This joint filler material shall be finished flush with the top and roadway face of the curb.

(g) When stipulated in the Uniform Bid Form and Special Specifications, that curb shall be set in a recess in the concrete foundation of the pavement, then this shall be done only after the concrete has become thoroughly hardened. The recess shall be cleared of all foreign matter and on its bottom surface there shall be placed a bed of stiff mortar, varying from one-quarter (1/4") inch to three quarter (3/4") inch in thickness and averaging one-half (1/2") inch in thickness depending on the irregularities in the bottom of the stone curb, or the concrete roadway foundation. When the curb stones have been so set, the recess on both sides of the curb shall be filled from top to bottom with liquid mortar. Compensation for providing the recess and for filling same with mortar after the curb has been set shall be included in the price per linear foot bid in the proposal for curb.

(h) Cuts of proper dimensions, executed in a neat and workmanlike manner shall be made where directed and where required in both new and old curb for drain pipe or gas pipe where required under the curb for connections. No additional compensation shall be made for such cuts.

(i) No extra compensation will be allowed for removing obstructions, gallery or shed posts, etc. that may be encountered in setting new or old curb, nor will any extra compensation be allowed for shoring or reinforcing sheds or galleries that may be necessary.

C707.06 CIRCULAR STONE CURB:

(a) Circular stone curb shall be granite, free of stratification and excess of mica, flint and feldspar. The entire top shall be peen-hammer dressed, and the face of eight (8") inches from the top and the back for four (4") inches from the top of the curb shall be neatly pointed. All edges shall be well defined. The stone shall have squared and neatly finished ends, so as to form close-fitting joints.

(b) Circular stone curb shall be of the radius indicated on plans or as otherwise specified. When the radius is two (2') feet or less, the circular curb shall be in one (1) piece; where the radius is more than two (2') feet, and not more than four (4') feet, the circular curb shall be in two (2) pieces; where the radius is more than four (4') feet, and not more than six (6') feet, the circular curb shall be in three (3) pieces; where the radius is more than six (6') feet, and not more than eight (8') feet, the circular curb shall be in four (4) pieces; where the radius is more than eight (8) feet, and not more than ten (10') feet, the circular curb shall be in five (5) pieces; and where the radius is more than ten (10') feet, and not more than twelve (12') feet, the circular curb shall be in six (6) pieces.

(c) Circular stone curb shall be twelve (12") inches in depth, five (5") inches in width at both ends, and of such widths intermediate to the ends as shown on plans.

C707.07 SETTING CIRCULAR STONE CURB:

(a) Circular curb shall be of the quality and dimensions hereinbefore prescribed for circular curb.

(b) All joints in circular stone curb shall be thoroughly and neatly jointed with mortar and such amount of lamp black added as may be necessary to make the color of the mortar correspond with the color of the stone immediately after it has been set and while it is to correct line and grade.

(c) Circular curb shall be placed on a concrete foundation four (4") inches in thickness mixed in proportion of one (1) part cement to three (3) parts fine aggregate to six (6) parts coarse aggregate.

C707.08 TIMBER CURB:

(a) Timber curb shall be placed on the lines and at the grades as shown on the drawings or as furnished by the Director, and shall be of the dimensions indicated on the plans and herein described.

(b) The face of curbs shall be set either barrier or with a batter as may be designated.

(c) Timber curb shall be formed of either creosoted No. 1 Common Pine, twelve (12 lb.) pound treatment, or treated No. 1 Common Pine .6 lb/cf of CCA, anchors, braces, sills and boards as shown on plans and herein described.

(d) Posts shall measure four (4") inches by four (4") inches and generally the length shall be three (3) times the depth of the finished curb measured on its surface. Posts shall generally be spaced six (6') foot centers apart.

(e) Boards shall be three (3") inches thick and not less than eight (8") inches wide and generally not less than sixteen (16') feet long. They shall be laid horizontal with close-fitting sides and end joints. Joints shall be broken so that boards alongside of each other shall not break joints on the same posts.

(f) At such points as may be designated, cuts of proper dimensions, executed in a neat and workmanlike manner shall be made for drain pipe connections and for the proper construction of foot bridges. No direct compensation shall be made for such cuts.

C707.09 ASPHALTIC CURB: Asphaltic curb shall be placed by an approved extruding machine. Prior to placing curb, the Contractor shall apply asphaltic tack coat conforming to Section C504.

C707.10 MEASUREMENT: The length of curb, gutter, and curb and gutterbottom will be established by measurements of the actual curb, gutter and curb and gutterbottom in place and no allowance will be made for waste due to closures or other causes.

Circular curb shall be measured at the top outer face.

Timber curb will be measured by the number of board feet (MFBM) including board and posts.

Joint materials, rebars, concrete base and piers for stone curb or resetting existing curb shall not be measured for payment.

Excavation for reconstruction of curb and gutter bottom only, and excavation for setting and resetting stone curbs in rehabilitating projects shall not be measured for payment.

C707.11 PAYMENT: Payment for curbs, gutters, and curbs and gutterbottoms shall be made at the contract unit price per linear foot including curb transitions or depressions or after hand-forming curbs and curb and gutterbottom as directed by the Director, subject to the payment adjustment

provisions of Section C501 for asphaltic concrete mixtures and Section C601 for Portland cement concrete.

Payment for wood curb shall be made at the contract unit price per Thousand Board Feet (MFBM).

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C707(54)	Asphaltic Curb	Linear Foot
C707(55)	Concrete Mountable Curb with or Without Dowels (Straight, Circular or Depressed)	Linear Foot
C707(56)	6" Concrete Barrier Curb with or Without Dowels (Straight, Circular or Depressed)	Linear Foot
C707(57)	8" Concrete Barrier Curb with or Without Dowels (Straight, Circular or Depressed)	Linear Foot
C707(58)	Concrete Gutterbottom or Rolling Strip	Linear Foot
C707(59)	Concrete Mountable Curb and Gutterbottom	Linear Foot
C707(60)	6" Concrete Barrier Curb & Gutterbottom or Rolling Strip	Linear Foot
C707(61)	8" Concrete Barrier Curb & Gutterbottom or Rolling Strip	Linear Foot
C707(62)	Stone Curb Including Base (Straight, Circular or Depressed)	Linear Foot
C707(63)	Reset Existing Curb (Precast Concrete, Stone, etc.) Including Base	Linear Foot
C707(64)	Timber Curb	Thousand Board Feet (MFBM)

SECTION C713
TEMPORARY SIGNS, BARRICADES AND PAVEMENT MARKINGS

C713.01 MAINTENANCE OF TRAFFIC:

(a) Reasonable provisions for local traffic throughout the length of the project and the life of the contract must be made by the Contractor during construction without direct compensation.

(b) When specified, the Contractor may also be required to provide for through traffic over the entire project, or designated portions thereof.

(c) The Contractor shall keep the portion of the project being used by public traffic, whether through or local traffic, in such condition that traffic (including garbage collection and mail delivery) will be adequately accommodated. He shall furnish, erect and maintain barricades, warning signs and delineators, and shall provide flagmen and pilot cars in accordance with the plans and the MUTCD. He shall also provide and maintain, in a safe condition, all required temporary approaches or crossings, intersections with roads, streets, business parking lots, residences and garages.

C713.02 PAVING SEQUENCES:

(a) When asphaltic concrete pavement layers are placed in two (2") inch thickness or less, the Contractor will be permitted to pave in one lane for a full day; the adjacent lane may be paved the following workday. When pavement layers are greater than two (2") inch thickness, the Contractor shall place approximately one half (1/2) of each day's production in one (1) lane and the remainder in the adjacent lane. At the end of each day's overlay operation, temporary pavement markings shall be placed and proper signs and barricades displayed. During the period that all lanes are open to traffic, the Contractor shall neither store material nor park equipment on roadway shoulders.

(b) The Contractor shall be responsible for supplying, maintaining and moving, when necessary, adequate barricades, warning signs and lights to safely inform the traveling public as to the location of the work at all times.

C713.03 DETOUR PLAN:

(a) The Contractor shall adhere to the detour plan as shown in the plans. Any changes requested by the Contractor must be approved by the Director before implementation.

Where no detour plan is shown, but is required by the Director to maintain the safe and efficient flow of traffic or efficiency of the Contractor's operation, it shall be developed by the Contractor and approved by the Director.

(b) The Contractor is to provide and maintain construction fences, temporary barricades and sidewalks as required by the Department of Public Works or other authorities in providing security to the premises during the construction period. The Contractor shall provide all necessary items to

insure accessible pedestrian access to properties during construction. When required, the Contractor shall maintain sidewalk barricades, fences and lighting with flashing lights or steady burn lights at locations required by local authorities.

(c) Hauling of material or equipment. Any material or equipment hauled to or from the construction site will be by a route approved or designated by the Department of Public Works Traffic Engineering Division prior to start of construction.

C713.04 TEMPORARY SIGNS, BARRICADES, AND PAVEMENT MARKINGS: Temporary signs, Barricades and Pavement Markings shall conform to Section 713 of the LaDOTD Louisiana Standard Specifications for Road and Bridges, the latest Edition.

C713.05 MEASUREMENT: The furnishing, erecting, maintaining and subsequent removing of temporary construction signs, barricades, pavement markings & markers and related devices will be measured on a lump sum basis.

C713.06 PAYMENT: Payment for temporary construction signs, barricades and related devices will be at the contract lump sum price in accordance with the following schedule:

% of Total Contract Amount Earned	**Allowable % Lump Sum Price for Temporary Signs and Barricades**
Initial Erection	20
25	40
50	60
75	80
100	100

Payment will be made under:

ITEM NO.	**PAY ITEM**	**PAY UNIT**
C713(51)	Temporary Signs, Barricades, Pavement Markings	Lump Sum

HORTICULTURAL REQUIREMENTS

SECTION C714
SODDING

C714.01 DESCRIPTION: This work consists of furnishing, hauling, planting, rolling, watering and maintaining live grass sod at locations shown on the plans or as directed. Sodding shall be in compliance with the Department of Parks and Parkways Section 02485 “Seeding and Sodding” which shall take precedence in any conflict.

C714.02 MATERIALS: Approved sod shall be either field grown grass or nursery grown grass.

Field grown grass sod shall be Bermuda grass or other approved grass native to the sodded area.

Nursery grown grass sod shall be Tiffway Bermuda, Common Bermuda or St. Augustine grass. If Common Bermuda sod is laid between September 15 and March 31, the Contractor shall overseed the sod with Fescue seed as otherwise indicated in the Seeding Section (C717).

Fertilizer shall be Agriform CRF 16-7-12 (+ iron) or equal approved by the Department of Parks and Parkways.

Sod shall be free from noxious weeds or other vegetation.

Water may be obtained from any source. Brackish, chemically contaminated, or oily water shall not be used.

C714.03 GENERAL CONSTRUCTION REQUIREMENTS: Sod shall be Grade A and cut with approved sod cutters. The designated area shall be mowed when necessary. Sod shall be cut to a minimum soil depth three quarter (3/4”) inch to one (1”) inch for field grown grass and one (1") inch for nursery grown grass, and to a uniform width and in convenient lengths for handling. Soil shall be retained on roots of sod during excavating, hauling and planting. Only common Bermuda slab sod shall be used within thirty (30') feet of the outer edges of paved shoulders. Sod cut more than 48 hours before placing shall not be used unless authorized. Sod taken from areas that may produce inferior growth will not be accepted.

C714.04 HANDLING SOD: Sod shall be placed flat, grass side up on boards of convenient lengths and hauled to planting site with soil intact. Only one layer of sod shall be placed on each board. Boards shall be of sufficient thickness to prevent excessive bending and of sufficient width to prevent sod from hanging over the edges.

Stacked sod shall be kept moist and satisfactorily protected from the elements.

C714.05 PLANTING: Areas to receive sod shall be pulverized to a depth of at least four (4") inches, graded and cleared of weeds, grass, stones and other debris. If an item for agricultural lime is included in the contract, liming shall be done when the area is being pulverized. When an

item for fertilizer is included in the contract, approximately ninety (90%) percent shall be broadcast over the area to receive sodding, and the remaining ten (10%) percent shall be broadcast over sod after placing and rolling. Upon delivery to the planting site, sod shall be transferred onto the surface soil. Areas to be sodded shall be watered as directed. Sod shall be placed with minimum space between slabs. Slabs which do not fit closely shall be pulled together with suitable tools and pegged when necessary. When directed, sod surface will be top dressed with sand to smooth-out uneven spots. Sod should have alternating seams (joints).

C714.06 ROLLING: Sod shall be rolled after planting with smooth drum steel rollers or cultipackers. Where rolling is impractical, sod shall be tamped by approved hand methods. Sod shall be installed to cover all exposed bare areas, with tight even seams. Sod shall be rolled after installation to ensure complete contact with the soil.

C714.07 WATERING: Sodding shall be watered as directed. Water sod immediately after installation. Watering shall be done in a manner to prevent erosion of soil or sod. Sod shall be kept moist for thirty (30) days after sodding.

C714.08 MAINTENANCE AND PROTECTION:

(a) Rainfall is usually not adequate to keep newly seeded or sodded turf grasses alive and healthy, supplemental watering is required.

(b) Refill, resod, and refertilize all bare areas as necessary to achieve complete coverage with a satisfactory stand of grass with no gaps larger than four inches (4") square.

(c) At least three (3) mowings shall be completed before the turf will be accepted. At the time of the first cutting, mower blades should be set at 2-1/2" high. Mow prior to the grass growing taller than 3.75". Inform the Parkway and Park Commission Landscape Architect at time of each mowing.

(d) The sodded areas shall be protected against traffic by placing warning signs, protective fencing, or other means as may be required until turf is established and accepted by the Parkway and Park Commission

C714.09 MEASUREMENT: Sodding shall be measured by the square yard along the surface of the completed sodding.

C714.10 PAYMENT: Payment for sodding shall be made at the contract unit price, which includes water and fertilizer.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C714(51)	Sodding	Square Yard

SECTION C717
SEEDING

C717.01 All areas of public greenspace where turf grass has been damaged during construction shall be reseeded by the Contractor. The plans shall designate the limits of seeding and fertilizing.

C717.02 Materials to be used shall include:

(a) Soil: Soil required for preparation of seed bed shall be Mississippi River Batture Sand.

(b) Seed: Grass seed (March through September) shall be hulled Bermuda Grass with minimum 82% by weight of pure live seed and maximum 1% by weight weed seed.

Grass seed (September through March) shall be 50% Turf Type Tall Fescue (variety "Jaguar") and 50% non-hulled Bermuda Seed. Fescue shall have minimum 82% by weight pure live seed have minimum 82% by weight pure live seed and maximum 1% by weight weed seed.

(c) Fertilizer: Fertilizer shall be a complete fertilizer with an analysis of 8-8-8, 13-13-13, or equal approved by the Parkway and Park Commission.

C717.03 PREPARATION AND INSTALLATION:

(a) Prior to seeding, the bed shall be prepared by breaking, disking, harrowing, blading, dragging or other approved methods. The soil shall be thoroughly pulverized to a minimum depth of four (4") inches and smoothed by means of raking or other approved method. This requirement may be waived if 3" to 4" of Mississippi River Batture sand is used for dressing. Each area then shall be rolled with a light roller and then finely raked. The finished surface shall be smooth, finely textured and free from sticks and debris.

(b) Fertilizer shall be distributed evenly, by mechanical spreader, over all areas to be seeded. The rate of application shall be twenty (20) pounds per 1,000 square feet, as per manufacturer's specifications.

(c) Grass seed shall be applied at the rate of ten (10) pounds each of the specified seed types per 1,000 square feet of seed bed by means of an approved mechanical seed spreader which will provide a depth of 1/8" to 1/4", or rake seed into soil.

(d) Water seed immediately after installation. Watering shall be done in a manner to prevent erosion of soil or seed.

C717.04 MAINTENANCE AND PROTECTION:

(a) Rainfall is usually not adequate to keep newly seeded or sodded turf grasses alive and healthy, supplemental watering is required.

(b) Refill, reseed and refertilize, all bare areas as necessary to achieve complete coverage with a satisfactory stand of grass no gaps larger than four inches (4") square.

(c) At least three (3) mowings shall be completed before the turf will be accepted. At the time of the first cutting, mower blades should be set at 2-1/2" high. Inform the Parkway and Park Commission Landscape Architect at time of each mowing.

(d) The seeded areas shall be protected against traffic by placing warning signs, protective fencing, or other means as may be required until turf is established and accepted by the Parkway and Park Commission.

C717.05 MEASUREMENT: Seeding will be measured by Lump Sum.

C717.06 PAYMENT: Payment for seeding, including fertilizer and water will be made at the contract unit price under:

ITEM NO.	PAY ITEM	PAY UNIT
C717(51)	Seeding	Lump Sum

SECTION C719
LANDSCAPING

C719.01 TREE PROTECTION: At the field plan-in-hand meeting of each project, the Department of Public Works and the Department of Parks and Parkways will prepare a list which will state the location of each tree by station and distance off the survey base line and what work is required at each tree location. The list will be enclosed in the project specifications. Tree protection shall be in compliance with the Department of Parks and Parkways Section 02480 "Landscape Protection During Construction".

(a) The Contractor shall be responsible for damage to any City tree within the construction area and liable to the City for compensation of damage.

(b) The Contractor must notify the Department of Parks and Parkways, Tree Department at least ten (10) working days prior to the beginning of construction.

(c) The Contractor shall provide a Louisiana Licensed Arborist to perform the necessary tree trimming, root pruning, or removal of any tree or stump on City property. A non-exclusive list of licensed previously approved arborists may be obtained from:

Department of Parks and Parkways
Tree Department
2829 Gentilly Blvd.
New Orleans, LA 70122
Ph. (504) 658-3201
Fax. (504) 658-3227
ParksandParkways@nola.gov

(d) The Licensed Arborist must obtain a permit from the Department of Parks and Parkways, Tree Department prior to working on any City Trees.

(e) The Critical Root Zone (CRZ) of a tree is established on the basis of the trunk diameter. The CRZ is a circular area which extends from the trunk in a radius of 12 inches to every inch diameter of trunk taken at 4.5 feet above grade, or to the outer edge of the dripline, whichever distance is furthest.

(f) Prior to beginning construction, the Contractor must complete trimming trees requiring clearance for all new construction.

(g) The attachment of signs, barricades, equipment or materials in any manner to any tree is prohibited.

(h) Excavation within the CRZ of any City tree is permitted only under existing roadbeds. All other excavation (i.e. street widening, neutral grounds, or sidewalks) within the dripline of any City trees will be inspected by the Department of Parks and Parkways, Tree Department prior to beginning construction.

(i) Trenching within the CRZ of any City tree is not permitted. Boring or hydraulic jacking is acceptable within the dripline if performed according to the following specifications. The boring or jacking must be at minimum depth of thirty inches (30") and begin ten (10') feet from the dripline of the tree. Placement of boring pits and direction of the boring must be approved by the Director prior to beginning construction. Under unusual conditions, the Director may approve alternative methods. Boring or jacking shall be in compliance with Section C728 "jacked or bored pipe."

(j) Where tree roots interfere with placement of new curbs, delete the typical one (1') foot excavation for placement of new curbs within the driplines of any City-owned tree. Hand forming curbs within the dripline of City trees may be required at no direct pay.

(k) Where tree roots interfere with placement of new sidewalk, wherever possible ramp over roots using a minimum four (4") inch gravel bed and filter cloth between the gravel bed and the new concrete. If ramping is not an option, an on site inspection by the Department of Public Works, Department of Parks and Parkways, the Contractor, and the Contractor's licensed arborist will be required prior to excavating for the new sidewalk to determine the extent of root pruning necessary for construction clearance. Do not place expansion joints over roots, only use control joints.

(l) No more than two (2") inches of cut or fill is permitted within the CRZ of any City-owned tree except under existing roadbeds.

(m) Storage is never permitted within the CRZ of any tree. The use of neutral grounds and other City property for the storage of materials, supplies, equipment, or vehicles is permitted only with specific written authorization from the Department of Parks and Parkways Director.

(n) The erection of barricades around the perimeter of tree CRZ may be required. The Contractor is responsible for maintaining the temporary barricades until completion of the project. The tree protection fencing and posts shall be removed upon Substantial Completion and become the property of the Contractor. The minimum barricade requirements shall be the following:

Wooden or rigid chain link barricade of at least five (5') feet in height.

(o) Tree trimming is defined as the cutting of tree branches. The Parkway and Park Commission Urban Forester will consult the Contractor and the licensed arborist to determine the extent of trimming allowable. Tree trimming will only be performed on tree branches conflicting with construction. No trimming will be allowed that will alter the natural form of a tree.

(p) Root pruning is defined as the cutting or grinding of roots. The Parkway and Park Commission Urban Forester will consult with the Contractor and the licensed arborist to determine the extent of root pruning allowable.

(q) Root trenching is defined as cutting of roots using a trenching machine. The Parkway and Park Commission Urban Forester will consult with the Contractor and the licensed arborist to determine the extent of root trenching allowable.

(r) Root pruning and root trenching will be at No Direct Payment for trees with less than four (4") inch caliper measured six (6") inches off the existing ground.

C719.02 MAINTENANCE OF NEUTRAL GROUNDS:

(a) The Contractor is responsible for restoring the neutral ground to a like or better condition than existed prior to construction. All areas disturbed during construction shall be regraded to a smooth even surface, eliminating ruts and holes. All obstructions such as bricks, concrete, wire, cable, wood, metal, shell, gravel, and other debris must be removed. Pump Sand may be used to backfill low areas to complete grading. Restoration of turf grass is covered in Section C717.

(b) The Contractor is responsible for the maintenance of turf grass and other plant material on neutral grounds within the limits of the entire construction area defined by the project limits on the construction plans and specifications for the duration of the project.

(c) Maintenance shall commence when construction begins or when any supplies, equipment, signs, barricades, or other materials related to the construction are placed on the neutral ground, whichever occurs first; and continue until Final Acceptance.

(d) Maintenance shall primarily include mowing with grass to be maintained no higher than six (6") inches at any time. Intervals between mowing shall not extend beyond three (3) weeks.

(e) Under certain rare circumstances, if newly planted trees or shrubs or other existing plantings requiring maintenance during construction, are inaccessible to Parkway and Park Commission maintenance personnel and equipment for watering, weeding, trimming or other maintenance, the Contractor may be required to perform such maintenance during construction at no Direct Pay.

(f) The Contractor shall be responsible for damage to any City-owned tree, groundcover, or shrub on the neutral ground or other greenspace within the construction area and liable to the City for compensation of damage.

(g) No tree, groundcover, or shrub may be removed from public greenspace without the approval of the Director.

C719.03 INSTALLATION OF NEW AND RELOCATED TREES AND SHRUBS:

(a) Removal from the construction site of trees or shrubs to be relocated shall be accomplished by the use of an appropriately sized tree spade. For trees, the tree spade must be adequate to obtain a minimum of one (1') foot of root ball diameter for each one (1") inch of tree caliper measured one (1') foot off the ground.

(b) The Contractor must contact the Department of Parks and Parkways Landscape Architect at least ten (10) working days prior to the installation of new or relocated trees and shrubs. The Department of Parks and Parkways Landscape Architect will determine and identify the planting sites for new or relocated trees and shrubs.

(c) The Contractor is responsible for ensuring that all trees and shrubs are planted according to locally accepted horticultural practices, including planning hole preparation, soil backfill, fertilizer, mulch, watering, staking, and guying (See Standard Plans). Planting shall be in compliance with the Department of Parks and Parkways Section 02481 “Installation of New Plant Materials”.

(d) The Contractor is responsible for maintenance of any new or relocated trees and shrubs from the time of planting until one year from the date of Final Acceptance of the project.

(e) Maintenance shall include all necessary watering, fertilizing, weeding, pruning, disease and insect control, straightening and adjustment, replacement of dead or unhealthy plants, and other procedures consistent with good horticultural practices which are necessary to insure normal, vigorous and healthy growth of the plant material.

C719.04 MEASUREMENT:

(a) Gravel bed and filter cloth over tree roots shall be measured by square yard.
(b) Tree protection shall be measured per the linear foot.
(c) Tree removal shall be measured per each.
(d) Tree replacement shall be measured per each.
(e) Tree relocation shall be measured per each.
(f) Tree trimming shall be measured per the lump sum.
(g) Root pruning shall be measured per each.
(h) Root trenching shall be measured per each.

C719.05 PAYMENT:

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C719(55)	Gravel Bed and Filter Cloth over Tree Roots	Square Yard
C719(56)	Tree Protection	Linear Foot
C719(57)	Tree Removal (dbh Size, Type)	Each
C719(58)	Tree Replacement (dbh Size, Type)	Each
C719(59)	Tree Relocation (dbh Size, Type)	Each
C719(60)	Tree Trimming	Lump Sum
C719(61)	Root Pruning	Each
C719(62)	Root Trenching	Each

INCIDENTAL CONSTRUCTION II

SECTION C723
GRANULAR MATERIAL

C723.01 DESCRIPTION: This work consists of furnishing and placing batture sand for dressing behind the curb and granular material for other adjustments, in accordance with these Specifications and in conformity with the lines, grades and typical sections shown on the plans and as directed.

C723.02 MATERIALS: Batture sand shall be used for dressing behind the curb. When the cross slope is steep and construction takes place during the rainy season, batture sand shall be replaced by silt clay soil at no additional cost as directed by the Director. For other adjustments, granular material shall be used and conform to subsection 1003.07.

C723.03 MEASUREMENT: Soil dressing behind the curb and granular material shall be measured by the cubic yard, truck measure.

C723.04 PAYMENT: Payment for soil dressing behind the curb and granular material for other adjustments will be made at the contract unit price, including compaction.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C723(52)	Batture Sand for Dressing, Granular Material for other Adjustments	Cubic Yard, Truck Measure

SECTION C724
PAVEMENT REPAIR, JOINT REPAIR, AND CRACK REPAIR

C724.01 DESCRIPTION: This work consists of pavement repair, joint repair and crack repair of existing pavements in accordance with applicable sections of the City Code and these specifications and in conformity with the lines, grades and typical sections shown on the plans or as directed.

C724.02 MATERIALS:

Portland cement concrete shall conform to Section C601.
Asphaltic concrete shall be any type mixture listed in Section C501 or Section C502.
Asphaltic tack coat shall conform to Section C504.
Mix for joint repair shall be Type 3 Wearing Course conforming to Section C501.

C724.03 EQUIPMENT: Equipment furnished shall meet the specification requirements for the types of material used.

C724.04 GENERAL CONSTRUCTION REQUIREMENTS: The Contractor shall remove existing surfacing and base materials and perform all required excavation for pavement repair, joint repair and crack repair. When through traffic is maintained, the Contractor shall complete the replacing of pavement, place the widening material, or fill and compact open areas or trenches, at the end of each day's operation.

Excavation and compaction of the subgrade shall be in accordance with the plans or as directed by the Director. The subgrade shall be compacted uniformly.

Existing surfacing and excess excavation shall be disposed of beyond the right-of-way in accordance with Section C202.

C724.05 SCOPE: The scope of the roadway pavement repair and restoration required is based on the extent of pavement repair required, type of pavement, condition/age of the pavement, and type of street. For purposes of roadway pavement repair scoping the following definitions apply:

Concrete panel - A panel is defined as a homogenous section bound by full original construction joints on each side.

Condition of the pavement – the condition of the roadway pavement on a specific block as reflected by its Pavement Condition as determined using ASTM D6433 - 11: Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys. Pavement Conditions include Excellent, Good, Fair, Poor, Very Poor, and Failure.

Pothole – a contiguous area in the roadway of less than 12 square feet where the pavement exhibits distress and/or is beginning to fail, or has failed, but the base course underneath the pavement has not begun to fail. Potholes shall be repaired in accordance with Section C724.11.

Utility Service Cut – an intentional cut into the roadway surface as part of an excavation that extends through the pavement and is a feature of work for the repair, replacement, installation or other related work on one or more underground utility lines.

(a) Restoration of concrete pavements and pavements with a bituminous wearing surface and concrete foundation. In the case of concrete pavements and pavements with a bituminous wearing surface and concrete foundation, the following shall be required when restoring utility service and other repair cuts regardless of size:

(1) The concrete for restoration of service cuts shall have a compressive strength of at least 4,500 pounds per square inch at 72 hours. On streets with a concrete base or full depth concrete paving, dowelling into the existing concrete pavement shall be employed.

(2) The pavement must be restored by replacement of the full concrete panel in which the cut or part of the cut is made, unless otherwise approved/directed by the DPW Director or his designee.

(3) The concrete and any wearing surface on top of the concrete base shall be saw cut and remove, to a depth equal to that of the pavement to be restored, unless otherwise directed by the DPW Director. Cutouts outside of the trench lines must be normal or parallel to the trench line. Pavement edges shall have vertical face and be neatly aligned with the center.

(4) If the extent of the cut(s) and subsequent pavement restoration is seventy-five percent (75%) or more of the pavement surface area of the street block in which the cut was made, the entire street block from intersection to intersection shall be repaved, unless otherwise approved/directed by the DPW Director.

(b) Restoration of asphaltic concrete pavements. In the case of full depth asphalt roadways, the following shall be required when restoring utility service and other repair cuts regardless of size:

(1) The existing pavement shall be saw cut and removed in a manner that does not damage the base that is to remain in place, for a distance of at least 12 inches on each side of the width of the trench and 12 inches at each end thereof.

(2) In addition to the full-depth restoration of the cut, the street's wearing surface to a minimum depth of 2-1/2 inches shall be removed and replaced on the entire street block, as measured from beginning of intersection to the beginning of intersection, as part of the pavement restoration, unless otherwise approved/directed by the DPW Director, if:

a) The roadway pavement and one or more major utility lines (water, sewer, drainage) have been constructed or reconstructed within the last 5 years (3 years, if the roadway was only resurfaced) and the service cut and subsequent pavement restoration runs

for more than 100 linear feet along the length of the block or covers 25% or more of the pavement surface area of the block; or

b) The service cut and subsequent pavement restoration runs for more than 150 linear feet along the length of the block or covers 50% or more of the pavement surface area of the block, regardless of the age of the pavement.

For purposes of this determination, the restoration of more than one separate cut made within a 12-month period shall be considered as one combined restoration effort.

The Director may grant exceptions to these roadway pavement repair and restoration requirements on a case-by case basis upon written request, subject to applicable City Code requirements.

If the roadway pavement damages/repairs extend into the area of the roadway or curb and no Americans with Disabilities Act (ADA) compliant is present, then an ADA-complaint ramp is required to be installed as part of the repair and restoration work on that corner, except as directed by the Director and except in cases where routine maintenance such as pothole repairs (C724.11), joint resealing (724.09), and crack repairs (C724.08 or C724.10), is being completed.

C724.06 ASPHALTIC CONCRETE REPAIR:

(a) Where a section of an existing asphaltic concrete roadway has deteriorated and needs to be replaced, it shall be completely removed and replaced with full depth asphaltic concrete.

(b) On streets having a bituminous wearing surface, such surfaces shall be removed for a distance of 9 inches on each side of the width of the trench and 9 inches at each end thereof.

(c) If the bituminous surface is on concrete base, the concrete shall be undercut for nine inches to form a keyway having a depth equal to that of the pavement to be restored.

(d) When the bituminous surfacing is on a base other than concrete, it will then be required to cut back the base for nine inches in each horizontal direction.

(e) Unstable pavement shall be removed over cave-ins, areas of contiguous subsidence, overbreaks and small floating sections and is to be treated the same as the main trench.

(f) Cutouts outside of the trench lines must be normal or parallel to the trench line. Pavement edges shall have vertical face and be neatly aligned with the center.

(g) The Director will designate the area of pavement to be removed. A minimum of 2 inches saw cut into the pavement shall be required to ensure a square break of the pavement to be removed.

(h) All pavement within the designated area shall be removed and the subgrade area prepared to receive an eight (8") inch compacted base course. Compacted pumped sand as required shall be used to replace unsuitable subgrade or to fill voids as directed.

(i) Just prior to placing the new asphaltic concrete, the vertical faces of the old asphaltic pavement shall be coated with asphaltic tack coat, and an asphaltic coat shall be applied on the base course. Tack coat **and** prime coat shall conform to all requirements of Sections C504 and C505.

C724.07 CONCRETE PAVEMENT REPAIR:

(a) Where expansion has caused a buckling of the roadway base pavement resulting in a ramp effect in the roadway or where sections of roadway pavement have deteriorated and need to be replaced, sections of roadway pavement are to be completely removed and replaced with High Early Strength Concrete Pavement and subsequent asphalt surfacing as required.

(b) The Director will designate the areas of pavement to be removed. Asphalt surfacing, if any, shall be removed to permit a minimum of two (2") inches saw cut into the concrete base pavement is required to ensure a square break of the pavement to be removed.

(c) The breaking out shall be done with hydraulic or pneumatic equipment only. No free fall equipment shall be allowed. When breaking the concrete pavement, every attempt shall be made to save a minimum twelve (12) inches of the existing welded wire fabric on each side. In the event that the welded wire fabric cannot be saved, or where none exists, tie bars shall be drilled and epoxy grouted into the existing pavement to allow for a proper tie-in.

(d) All concrete pavement within the designated area is to be removed and the subgrade area prepared to receive an eight (8") inch compacted base course. Compacted pumped sand as required shall be used to bring subgrade to the required elevation. It shall also be used to replace unsuitable subgrade or to fill voids as directed.

(e) Just prior to placing the new concrete, the vertical faces of the old concrete pavement are to be coated with an approved concrete epoxy per A.S.T.M. C 881 Type II. The new roadway pavement shall consist of four thousand (4,000) psi. at three (3) days, High Early Strength Concrete reinforced with 6 X 12 - W 7.5 X W 6.5 welded wire fabric, seventy-seven (77) pounds per one hundred (100) square feet. The new mesh shall be tied to the existing mesh where possible.

(f) Wherever a joint (any type) or a part thereof falls within the affected area, the same shall be reestablished in kind and shall be incidental to the work included as Concrete pavement repair.

(g) After all roadway pavement repairs have been completed at a location, Bituminous Wearing Course material, if required, shall be placed in a continuous operation.

C724.08 CONCRETE JOINT REPAIR:

(a) Where a roadway pavement contraction joint or expansion joint has failed, the roadway pavement and defective joint shall be removed and replaced with a new expansion joint and High Early Strength Concrete Pavement.

(b) The Director shall designate the areas of pavement and joints to be removed. Asphalt surfacing, if any, shall be removed to permit a minimum of two (2") inches saw cut into the concrete base pavement is required to ensure a square break of the pavement to be removed.

(c) The breaking out shall be done with hydraulic or pneumatic equipment only, no free fall equipment shall be allowed. When breaking the concrete pavement, every attempt shall be made to save a minimum twelve (12") inches of existing welded wire fabric on each side. In the event that the welded wire fabric cannot be saved or where none exists, tie bars shall be drilled and epoxy grouted into the existing pavement to allow for a proper tie in.

(d) All concrete pavement within the designated area shall be removed and the subgrade area prepared to receive an eight (8") inch compacted base course. Compacted pumped sand as required shall be used to bring subgrade to the required elevation. It shall also be used to replace unsuitable subgrade or to fill voids as directed.

(e) Just prior to placing the new concrete, the vertical faces of the old concrete pavement are to be coated with an approved concrete epoxy per A.S.T.M. C 881 Type II. The new roadway pavement shall consist of four thousand (4,000) psi. at three (3) days, High Early Strength concrete reinforced with 6 X 12 - W 7.5 X W 6.5 welded wire fabric, seventy-seven (77 lbs.) pounds per one hundred (100) square feet. An expansion joint is to be constructed.

(f) After all pavement and joint repairs have been completed at a location, bituminous wearing course material, if required, shall be placed in a continuous operation.

C724.09 JOINT RESEALING:

(a) This work shall apply for all type of joints requiring sealing.

(b) Clean all joints of contaminants, impurities and old sealants and backer rods, if any, by grinding, saw-cutting or blast cleaning.

(c) Blow out dust, loose particles and other debris from joints with oil-free compressed air.

(d) Install an approved backer rod in joints as required.

(e) Apply an approved joint sealant in a continuous operation to properly fill and seal the joint width.

C724.10 CRACK REPAIR:

(a) Cracks between three-eighth (3/8") and one (1") inch:

(1) A groove about one-half (1/2") inch wide and three-fourths (3/4") inches deep should be made along the crack by sawing or grooving. The equipment must be capable of following closely the path of the crack.

(2) Clean the crack with compressed air. The crack must be free of dust, dirt and other material that might prevent bonding of the seal.

(3) Seal the crack, using hot poured asphaltic-type sealant as specified in subsection C601.04(g)(2).

(b) Cracks greater than one (1") inch:

(1) Clean all cracks of contaminants, impurities and old sealants to the depth required by blast-cleaning.

(2) Coat vertical faces of the cracks with an asphaltic tack coat.

(3) Apply an approved asphaltic sand mix in a continuous operation to properly fill.

C724.11 POTHOLE REPAIR ON ACCESS ROUTES: The work consists of cutting the pavement around the pothole in a rectangular shape, lining with the tack coat, filling with hot mix asphalt wearing course and compacting. Location of repair sites shall be as specified by the Director and shall encompass sufficient work to require a minimum of one (1) ton of asphalt per repair operation.

C724.12 MEASUREMENT:

(a) Pavement repair and joint repair. Pavement repair and joint repair will be measured by the square yard of existing pavement designated to be removed and replaced.

(b) Joint resealing, and crack repair. Joint resealing and crack repair will be measured by the linear foot.

(c) Pothole repair on access routes. Pothole repair on access routes, will be measured by the ton of asphalt.

C724.13 PAYMENT: Payment will be made at the contract unit price.

(a) Asphaltic concrete repair: Payment for asphaltic concrete repair will be made at the contract unit price per square yard, including saw cutting, removal of existing pavement, base preparation excavation, base course, tack coat, prime coat and asphaltic concrete. The cost of pumped sand as mentioned in Subsection C724.05(c) will be paid for by bid item No. C203(58).

(b) Concrete pavement repair. Payment for concrete pavement repair will be made at the contract unit price per square yard, including saw cutting, removal of existing pavement, excavation, base preparation, base course, Portland Cement concrete and welded wire fabric. The cost of pumped sand as mentioned in Subsection C724.06(d) will be paid for by bid item No. C203(58).

(c) Concrete joint repair. Payment for concrete joint repair will be made at the contract unit price per square yard, including the work mentioned in Subsection C724.12(b) and installation of new joint assembly.

(d) Joint resealing. Payment for joint resealing will be made at the contract unit price per linear foot including the works described in Subsection C724.08.

(e) Crack repair. Payment for crack repair will be made at the contract unit price per linear foot, including the works described in Subsection C724.09.

(f) Pothole repair on access routes. Payment for pothole repair on access routes will be made at the contract unit price per the ton including the works mentioned in Subsection C724.10.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C724(51)(A)	Asphaltic Concrete Repair	Square Yard
C724(51)(B)	Concrete Foundation Repair with Asphalt Overlay	Square Yard
C724(51)(C)	Concrete Pavement Repair	Square Yard
C724(53)(A)	Concrete Joint Repair	Square Yard
C724(53)(B)	Joint Resealing	Linear Foot
C724(54)(A)	Crack Repair Between 1/8" and 1/2" Wide	Linear Foot
C724(54)(B)	Crack Repair Greater than 1" Wide	Linear Foot
C724(55)	Pothole Repair on Access Routes	Ton

SECTION C727
MOBILIZATION

C727.01 DESCRIPTION: This work consists of preparatory work and operations, including those necessary for movement of personnel, equipment, supplies and incidental to the project site; the establishment of offices, buildings and other facilities necessary for work on the project; the cost of bonds and any required insurance; and other preconstruction expenses necessary for start of the work excluding the cost of construction materials.

C727.02 PAYMENTS:

(a) When the contract does not include a pay item for mobilization, no direct payment will be made for mobilization.

(b) When the contract contains a pay item for mobilization, payment will be made at the contract lump sum price, subject to the following provisions:

Partial payments for mobilization will be made in accordance with the following schedule up to a maximum of ten (10%) per cent of the original contract amount, including this item, and payment of any remaining amount will be made upon completion of all work under the contract.

Percent of Total Contract Amount Earned		Allowable Percent of the Lump Sum Price For the Item
1st Partial Estimate	up to	25 **%**
10 **%**	up to	50 **%**
25 **%**	up to	75 **%**
50 **%**	up to	100 **%**

No payment adjustments will be made for this item due to changes in the work. Additional Mobilization cost occasioned, by a plan change, if approved, will be paid for within the Plan Change.

Nothing herein shall be construed to limit or preclude partial payments otherwise provided by the contract.

Payment will be made under:

ITEM NO.	**PAY ITEM**	**PAY UNIT**
C727(51)	Mobilization	Lump Sum

SECTION C728
JACKED OR BORED PIPE

C728.01 DESCRIPTION: This work consists of furnishing and installing pipe in embankments at the locations shown on the plans by jacking or boring in accordance with these specifications.

C728.02 MATERIALS: Pipe and joint materials shall conform to Section C701 for drain lines, C741 for water mains and C742 for sewer lines.

C728.03 CONSTRUCTION REQUIREMENTS: In general, pipes 30 inches diameter and greater shall be jacked, and pipes less than 30 inches diameter shall be bored.

The work shall begin at the outfall end of pipe when possible. When the grade at the jacking or boring end is below ground surface, suitable pits or trenches shall be excavated for conducting operations and placing joints of pipe. Adequate sheeting and bracing shall be provided to prevent earth caving.

For pipe with bell joints, if the outside diameter of pipe bell exceeds the outside diameter of pipe barrel by more than 1 inch, pipe shall be either cased or pressure grouted its full length. The casing shall be an approved type and size, and shall be furnished and installed by the Contractor in accordance with these specifications. Pressure grouting shall be performed with approved materials placed by approved methods.

The method used shall be such as not to weaken or damage the embankment. The Contractor shall furnish to the Director for approval a plan showing the proposed procedure, including backstop or jacking frame arrangement, pipe guides, position of jacks and jacking head. Approval of this plan shall not relieve the Contractor from responsibility to obtain the desired result.

(a) Jacking: Heavy duty jacks suitable for forcing pipe through the embankment shall be provided. Even pressure shall be applied to all jacks and shall be transmitted to the pipe end through a jacking head. The jacking head shall be designed so that pressure is uniformly applied around the ring of the pipe. Backstop or jacking frame shall be adequate to resist pressure of the jacks under load. Pipe shall be set on guides properly fastened together to support the pipe in the proper direction at correct grade. Suitable cushioning material, such as plywood, shall be provided between sections of concrete pipe.

Material shall be excavated ahead of the pipe and shall be removed through the pipe. Excavation shall not extend more than 2 feet beyond the forward end of pipe. When the character of embankment material dictates, the distance shall be reduced to prevent the embankment from being damaged. Excavated material shall be disposed of in accordance with Subsection C202.02.

Excavation on the underside of pipe, for at least 1/3 the circumference of pipe, shall conform to the contour and grade of the pipe. A clearance of not more than 2 inches may be provided for the upper half of pipe, tapered to zero at the point where excavation conforms to contour of pipe.
A steel cutting edge may be used around the forward end of pipe, constructed so that it will transmit pressures uniformly around the ring of the pipe.

Jacking shall continue without interruption, to prevent pipe from becoming firmly set in the embankment.

Pipe shall not vary horizontally or vertically by more than 1 inch in 10 feet from established line and grade. Any variation shall be regular, and no abrupt changes in direction will be permitted. Any pipe damaged or misaligned in jacking operations shall be removed and replaced by the Contractor at no direct pay.

(b) Boring: Boring shall be done mechanically, using a pilot hole approximately 2 inches in diameter. The pilot hole shall extend through the embankment and shall be checked for line and grade before boring begins. Variations from line and grade shall not exceed those specified for jacking. The pilot hole shall serve as centerline of the larger diameter hole to be bored.

The use of water and other fluids with boring operations will be permitted only to lubricate cuttings. Jetting will not be permitted.

In unconsolidated soil formations, a gel-forming colloidal drilling fluid consisting of at least ten (10%) percent high-grade, bentonite may be used to consolidate cuttings of the bit, seal walls of the hole, and furnish lubrication for subsequent removal of cuttings and installation of pipe.

Overcutting in excess of 1 inch shall be remedied by pressure grouting the entire length of the installation.

Pipe shall be joined as specified in Section C701 for drain lines, C741 for water mains and C742 for sewer lines.

C728.04 MEASUREMENT: Quantities of jacked or bored pipe for payment will be the design lengths as specified on the plans and adjustments thereto. Design quantities will be adjusted if the Director makes changes to adjust to field conditions, if plan errors are proven, or if design changes are made. Required excavation, sheeting, bracing, falsework, casing, joint materials and grouting will not be measured for payment.

C728.05 PAYMENT: Payment for jacked or bored pipe will be made at the contract unit price per linear foot under:

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C728(51)	Jacked or Bored Pipe (Size, Type, Class or Thickness)	Linear Foot

SECTION C729
TRAFFIC SIGNS AND DEVICES

C729.01 DESCRIPTION: The Contractor shall furnish and install traffic signs (street edge signs), street name signs and project signs with accessories and posts of specified materials, sizes, shapes, weights and designs.

In general, the work and materials shall conform to the MUTCD as modified by these specifications or as shown on the plans.

Signs shall be fabricated in an approved plant. The fabrication Contractor shall show evidence of successful experience in fabrication and erection of quality reflectorized signs.

The term legend shall mean border strip, letters, numerals and symbols which convey the message on signs.

C729.02 MATERIALS: Materials shall be new stock conforming to the following:

(a) Sign and Marker Sheeting: Sheeting material for sign panels, delineators and markers shall conform to LaDOTD Section 1015. Reflective sheeting material shall be either ASTM Type I, ASTM Type II or ASTM Type III, as specified. When not specified, either ASTM Type I, Type II or Type III may be furnished.

(b) Ferrous Metal: Ferrous metals shall conform to LaDOTD Subsection 1015.02(a). Ferrous metal shall be galvanized in accordance with LaDOTD Section 811.

(c) Aluminum: Aluminum sign panels shall conform to LaDOTD Subsection 1015.04(a).

(d) Fittings: Structural bolts, nuts, washers and miscellaneous hardware shall conform to LaDOTD Subsection 1015.02.

(e) Flexible Sign Posts: Flexible posts for small signs, markers and delineators shall conform to LaDOTD Subsection 1015.03.

C729.03 GENERAL REQUIREMENTS: The Contractor has the option of furnishing either steel or aluminum posts. Sign panels shall be aluminum. Before beginning work, the Contractor shall notify the Director in writing as to the combination of signing materials he proposes to furnish. The same combination of signing materials shall be used throughout the project.

C729.04 FABRICATION OF SIGNS AND MARKERS:

(a) General: The completed product shall have a surface free of cracks, blisters, blemishes and wrinkles.

Metal fabrication including shearing, cutting and punching of holes shall be completed prior to surface treatment of metal and application of sheeting. Metal panels shall be cut to size and shape and shall be free of buckles, warps, dents, cockles, burrs and defects resulting from fabrication. Surface of sign panels shall be flat.

Splice plates joining sign panels shall not extend behind horizontal sills. Aluminum panels shall be a nominal 0.080 inch thick.

(b) Surface Treatment: Surface treatment shall be in accordance with approved recommendations of the reflective sheeting manufacturer.

(c) Sheeting Application: Application of sign face and legend sheeting shall be in accordance with approved recommendations of the reflective sheeting manufacturer. Unless otherwise approved in writing, reflective sheeting shall be applied to panels in such a manner that there are no horizontal splices.

Legend shall be of the shape, size, dimension and stroke specified in the MUTCD and sign face shop drawings. Legend shall be applied in accordance with LaDOTD Subsection 1015.05.

(d) Object Markers and Delineators:

(1) Object Markers: Object markers shall be yellow reflectorized material conforming to LaDOTD Subsection 1015.05 and low gloss black nonreflectorized material conforming to LaDOTD Subsection 1015.06 or 1015.07, mounted on nominal 0.080 inch thick aluminum panels.

(2) Delineators: Delineators shall be ASTM Type III reflective sheeting (silver, red or yellow, as specified) conforming to LaDOTD Subsection 1015.05 applied to properly treated base panels, punched or sheared to specified dimensions for rigid steel posts or applied directly to flexible posts.

(e) Packaging: Before being packed, signs shall be allowed to stand for at least 12 hours after completion of screening. Signs shall be slipsheeted and packed in such manner as to ensure their arrival at their destination in an undamaged condition. Packaged signs shall not be permitted to become wet during storage or shipment.

C729.05 STREET NAME SIGNS: The Contractor shall supply erect street name signs complete, in place, according to the provisions below:

(1) Sign Dimensions:

8" High or 12” High, as specified by the Director.

24", 30" or 36" Long.
No faces longer than 36".

(2) Sign Material: Aluminum plate, 0.080 inch thick with all corners rounded on approximately 3/4" radius. All holes 7/32".

(3) Sign Legend and Border: See standard plans.

(4) Color: See standard plans.

(5) Sign Post: Galvanized steel, two (2 lb/ft) pounds per foot, U-channel. The sign post must be installed with seven (7') foot vertical clearance and three (3') feet of post underground.

(6) Bracket and Hardware: Bracket (if needed) and hardware in galvanized steel, approved by the Department of Public Works.

(7) Sign Locations: The number and location of street name signs shall be approved by the Traffic Engineer of the Department of Public Works. In principle, all existing vertical street name signs shall be replaced with new horizontal street name signs. All old signs, damaged or illegible, shall be replaced.

C729.06 PROJECT SIGNS: The Contractor shall supply erect project signs, complete in place according to the provisions, as detailed in the project specifications.

C729.07 CONSTRUCTION REQUIREMENTS: When removal of existing signs is required, the Contractor's sign removal operations shall be coordinated as directed with new sign construction to provide for adequate signing to be in place at all times.

(a) Sign Locations: Sign support locations shall be as shown on the plans or as directed. Locations which are obviously improper because of topography, existing appurtenances or other conflicting conditions will be adjusted to the closest desirable location. The Contractor shall determine elevations for post length determinations at the established sign support location.

(b) Sign Positioning:

(1) Traffic Signs: Traffic signs shall be constructed with sign faces vertical. Sign faces, other than parking regulations, located less than 30' from the edge of the travel lane shall be placed at a 93^{o} angle from the center of the travel lane. Sign faces located 30' or more from the edge of the travel lane shall be placed at an 87^{o} angle from the center of the travel lane. Parking signs shall be placed at a 45 degree angle from the center of the travel lane. Where the lanes divide or on curves or grades, sign faces shall be oriented to be most effective both day and night and avoid specular reflection.

(2) Delineator, Object Marker and Milepost Assemblies: These assemblies shall be placed at least 2' beyond the outer edge of roadway shoulder, 2' beyond the face of curb, or in the line of guard rail.

(3) Vertical and Horizontal Clearances: The bottom of the sign shall be a minimum of 7' above the existing terrain.

Minimum horizontal clearance from edge of roadway to any ground sign shall be as shown on the plans or as directed.

(c) After erection, sign faces shall be cleaned to allow adequate visibility of the sign.

C729.08 ACCEPTANCE OF SIGNS: After installation of signs is complete, the Traffic Engineer of the Department of Public Works will inspect the signs, sign faces, mounts, installations, hardware and matters relating to the requirements of this Section for conformance to applicable plans, standards and project specifications.

Color match, uniformity and spacing of legend, specular glare and, sign type and design will be inspected for conformance to plans and specifications. When specular reflection is apparent on any sign, its positioning shall be adjusted by the Contractor to eliminate this condition. Signs shall be clean at the time of inspection. Reflective sheeting shall be free of cuts, scratches, breaks or other defects which might allow moisture to infiltrate and damage reflective cells. Nonstandard or otherwise unacceptable signs and traffic control devices shall be replaced or repaired as directed by the Director. The Contractor will be required to correct damage that is discovered at the time of the sign inspection.

C729.09 MEASUREMENT: Traffic signs, street name signs, project signs, delineators and object marker assemblies shall be measured per each.

Concrete footing for securing sign posts will not be measured for payment.

C729.10 PAYMENT: Payment for installation of traffic signs, project signs, delineators and object marker assemblies shall be made at the contract unit price per each, including signs, posts and footing to complete the item in place.

Payment for installation of street name signs shall be made at the contract unit price per each, including four signs at each post, brackets, hardware, posts and footing to complete the item in place.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C729(51)	Traffic Sign	Each
C729(54)	Delineator Assembly	Each
C729(66)	Object Marker Assembly	Each
C729(71)(A)	Street Name Sign on Existing Post	Each
C729(71)(B)	Street Name Sign on New Post	Each
C729(72)	Project Sign	Each

SECTION C731
RAISED PAVEMENT MARKERS

C731.01 DESCRIPTION: This work consists of furnishing and placing raised pavement markers in accordance with plan details.

C731.02 MATERIALS:

(a) Markers: Markers shall conform to LaDOTD Subsection 1015.09. The same product shall be used throughout the project. Markers shall be the specified class, type, color, size and shape.

(b) Adhesive: Markers shall be placed with bituminous adhesive on asphaltic surfaces and epoxy adhesive on portland cement concrete surfaces.

(1) Bituminous Adhesive: Bituminous adhesive shall conform to LaDOTD Subsection 1015.09(c)(2).

(2) Epoxy Adhesive: Epoxy adhesive shall be Type V epoxy resin system conforming to LaDOTD Subsection 1017.02. Epoxy components shall be mixed in equal parts by volume. Adhesive shall be mechanically mixed and dispensed, unless hand methods are permitted.

C731.03 CONSTRUCTION REQUIREMENTS:

(a) Weather Limitations: Markers shall not be applied when there is moisture on the surface.

(1) Epoxy Adhesive: When a normal set adhesive is used, application of markers will not be permitted at ambient air temperatures less than 50^{o}F. When a rapid set adhesive is used, application of markers will be permitted at ambient air temperatures between 35^{o}F and 50^{o}F, provided adhesive is adequately heated to obtain proper viscosity for mixing and application, and provided adhesive is identified as a rapid set type on container labels and Certificates of Delivery.

(2) Bituminous Adhesive: Markers shall be applied when the ambient air temperature is 50^{o}F or greater.

(b) Cleaning of Surfaces: Surfaces on which markers are to be applied shall be cleaned of all materials that may reduce the bond of adhesive. Surfaces shall be cleaned by blast cleaning or other approved methods which do not damage the surface; however, blast cleaning equipment shall be provided with positive cutoff controls. Surfaces shall be maintained in a clean dry condition until placement of markers.

(c) Application of Markers: Surfaces on which markers are to be placed shall be blown dry immediately prior to marker placement. Markers shall be applied to surfaces with adhesive in accordance with the manufacturer's recommendations.

(1) Epoxy Adhesive: Voids in a cured undisturbed sample approximately 1/16 inch thick from the extrusion nozzle shall not exceed 4 percent by volume. Machine mixer and applicator shall be capable of accurately and uniformly proportioning the two components in a 1 to 1 ratio within five (5%) percent by volume of each component (i.e., within 47.5 to 52.5 percent for each component). Periodic checks of proportioning equipment shall be made to determine the actual ratio of components. This shall be done by placing containers in front of the mixing chamber and measuring the actual volume of each component. Equipment shall be arranged so it is possible to bypass the mixer to perform these periodic checks. Temperature of adhesive shall be maintained between 70°F and 110°F before mixing. The temperature shall be adjusted to prevent excessive flow of epoxy from the marker when installed. The area of the epoxy adhesive bed shall be equal to the bottom area of marker. Adhesive shall be applied in sufficient quantity to cause excess adhesive to be forced out around the perimeter of the marker. Voids in markers with an open grid pattern on bottom shall be filled with adhesive immediately prior to placement.

(2) Bituminous Adhesive: The adhesive shall be heated and melted in either thermostatically controlled double boiler type units utilizing heat transfer oil or thermostatically controlled electric heating pots. The melter/applicator unit shall be suited for both melting and pumping application through heated applicator hoses. The adhesive shall be heated to between 375°F and 425°F and applied directly to the pavement surface from the melter/applicator by either pumping or pouring. The area of the bituminous adhesive bed shall be a minimum of 6 inches in diameter. Markers shall be applied to the adhesive within 10 seconds. The marker shall be placed in the adhesive bed by applying downward pressure until the marker is firmly seated. Adhesive on exposed surfaces of markers shall be immediately removed with soft rags moistened with mineral spirits or kerosene. Markers shall be protected against impact until the adhesive has hardened. The adhesive may be reheated and reused; however, the pot life at application temperatures shall not be exceeded.

C731.04 MEASUREMENT: Reflectorized raised pavement markers will be measured by counting the number of markers furnished, placed and accepted.

C731.05 PAYMENT: Payment for reflectorized raised pavement markers will be made at the contract unit price under:

ITEM NO.	PAY ITEM	PAY UNIT
C731(52)	Reflectorized Raised Pavement Markers	Each

SECTION C732
PLASTIC PAVEMENT MARKINGS

C732.01 DESCRIPTION: This work consists of furnishing and placing reflective pavement markings of hot applied thermoplastic at the locations shown on the plans or as directed, in conformance with the MUTCD, plan details and these specifications.

C732.02 MATERIALS: Thermoplastic marking material shall be a plastic compound reflectorized by internal and external application of glass beads, conforming to LaDOTD Subsections 1015.10 and Subsection 1015.13, respectively. Width and color of markings shall be as specified.

Thermoplastic material shall be delivered in containers of sufficient strength to permit normal handling during shipment and transportation without loss of material. Approved heat-degradable containers that can be placed in heating kettles along with the plastic material will be permitted. Each container shall be clearly marked to indicate color of material, process batch number, name of manufacturer and date of manufacture. Glass beads used in drop-on application to molten plastic shall be shipped in sacks of multi-ply paper or burlap, both with a polyethylene liner. The sacks shall be strong enough to permit handling without damage, and have a capacity of 50 pounds of beads. Sacks shall be sufficiently water-resistant so that beads will not become wet or caked in transit.

C732.03 CONSTRUCTION REQUIREMENTS:

(a) Equipment for Thermoplastic Markings: Material shall be applied to pavement by either spray or extrusion methods. Equipment shall provide continuous mixing and agitation of material. Conveying parts of equipment between main material reservoir and discharge mechanism shall prevent accumulation and clogging. Parts of equipment which come in contact with the material shall be easily accessible for cleaning and maintaining. Mixing and conveying parts shall maintain material at the application temperature. Equipment shall be capable of producing continuous uniformity in dimensions of stripes. Equipment shall be capable of producing various widths of traffic markings. Glass beads shall be applied to the molten surface of completed stripes by an automatic bead dispenser attached to the striping machine in such a manner that beads are dispensed simultaneously with the thermoplastic material at a controlled rate of flow on installed lines. The glass bead dispenser shall be equipped with an automatic cutoff control synchronized with cutoff of thermoplastic material. Kettles to hold a minimum of 1,000 pounds of material shall be provided for melting and heating thermoplastic material. Kettles shall be equipped with automatic temperature control devices so that heating can be done by controlled heat transfer liquid rather than direct flame, to provide positive temperature control and prevent overheating of material. Applicators and kettles shall be equipped and arranged to comply with requirements of the National Board of Fire Underwriters. Applicators shall be maneuverable to the extent that straight lines can be followed and normal curves can be made in a true arc. Applicator equipment shall consist of a motorized mobile unit capable of installing traffic stripes either left or right of applicating unit so that only one lane for traffic will be occupied during installation.
Applicators shall produce sharply defined lines and provide means for cleanly cutting off stripe ends and applying broken lines. The applicator unit shall have a tachometer or other approved device to

insure uniform application at the required rate. It shall be adjustable for applying 1, 2, or 3 adjacent lines simultaneously at the specified spacing. The ribbon extrusion die or shaping die shall not be more than 2 inches above the roadway surface during application.

(b) Weather Limitations: Application of markings will not be permitted when there is excessive pavement moisture or when the surface temperature or ambient temperature is below 50^{o}F. The pavement shall be considered excessively moist when it is visibly wet or when a 1 square foot piece of polyethylene film condenses moisture after being placed on the pavement surface for 15 minutes.

(c) Cleaning of Surfaces: Surfaces on which markings are to applied shall be cleaned of materials that may reduce adhesion of the thermoplastic marking materials to the pavement. Cleaning shall be done by blast cleaning or grinding. Surfaces shall be kept clean until placement of markings.

Existing thermoplastic markings on the roadway that are not flaking or peeling do not require removal prior to placement of new thermoplastic markings. When thermoplastic markings will replace the existing painted markings, the existing painted markings do not require removal prior to applying new thermoplastic markings, provided the existing painted markings are not flaking or peeling.

Existing lane line pavement markings on bridges shall be removed prior to applying new markings.

When preformed plastic markings will replace any of the existing markings, the existing markings shall be removed prior to applying the preformed plastic markings.

Removal shall be accomplished by methods which will not damage the pavement or bridge deck. Removal shall be to such extent that 75% of the pavement surface or bridge deck under the markings is exposed. At the end of each day's operations, temporary pavement markings conforming to Section C713 shall be placed in areas where existing markings have been removed and new markings not placed. Temporary pavement markings shall be satisfactorily removed prior to resuming plastic striping operations.

(d) Application of Markings: Material shall be installed in specified widths from 4 inches to 24 inches. Finish lines shall have well defined edges and be free of waviness. Measurements shall be taken as an average through any 36-inch section of line. Longitudinal lines shall be offset approximately 2 inches from longitudinal joints. A tolerance of +1/2 inch and -1/8 inch from the specified width will be allowed, provided the variation is gradual. Segments shall square off at each end without mist or drip. Transverse variations from the control device up to 1 inch will be allowed provided the variation does not increase or decrease at the rate of more than 1/2 inch in 25 feet. Lines not meeting these tolerances shall be removed and replaced at no direct pay.

Thickness of material, not including drop-on beads, shall be not less than 90 mils for lane lines, edge lines and gore markings and not less than 125 mils for crosswalks, stop lines and word and symbol markings. A binder sealer material recommended by the thermoplastic marking manufacturer shall be applied to the pavement surface or bridge deck prior to application of the

thermoplastic markings. Thermoplastic material shall be applied either by extrusion at 390°F to 450°F or by spray at 410°F to 450°F. Immediately after application of the markings, glass beads shall be applied at a minimum rate of 300 pounds per mile. Material shall not scorch or discolor when kept at this temperature range for four hours.

C732.04 MEASUREMENT:

(a) Plastic Pavement Striping: Plastic striping will be measured by the linear foot of striping, exclusive of gaps.

(b) Plastic Pavement Legends and Symbols: Plastic legends and symbols will be measured by lump sum. Symbols shall include all letters, lines, bars or markings necessary to convey the message at each location.

C732.05 PAYMENT: Payment for plastic pavement markings and removal of existing markings will be made at the contract unit prices.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C732(52)	Plastic Pavement Striping (Solid Line)(___" Width)	Linear Foot
C732(53)	Plastic Pavement Striping (Broken Line)(___" Width)	Linear Foot
C732(54)	Plastic Pavement Legends and Symbols	Each
C732(55)	Plastic Pavement Striping Removal	Linear Foot

SECTION C736
RESTORATION OF TRAFFIC SIGNAL LOOP DETECTORS IN CONNECTION WITH ROADWAY REHABILITATION

C736.01 GENERAL: Vehicle Loop detectors shall detect the presence or passage of every vehicle which passes over the interconnected loop embedded in the surface roadway. Loops shall be of the size and shape indicated in the plans. Loop construction shall be in conformance with the details in the plans and these specifications.

C736.02 TESTING: Each Loop shall be tested for continuity, resistance, inductance and insulation leakage. For the latter, a 600-volt Megohmeter shall be used to measure resistance between one end of lead-in wire and the nearest reliable electrical ground. Resistance to ground shall be greater than 10 megohms. Inductance shall be checked with an approved Loop Tester supplied by the Contractor.

This test shall be made with no vehicle over the Loop. The Contractor shall perform these tests in the presence of the authorized representative of the Department of Public Works unless written authorization is given by the authorized representative for permission to do otherwise. Tests shall be made from the pullbox where the Loop wires tie into the lead-in, and at the controller cabinet where the lead-in cable is terminated. The Contractor shall record the location, data and readings taken, noting satisfactory results have been obtained. Any Loop failing to pass these tests shall be recut at the Contractor`s expense.

C736.03 SAW CUT: Loop wire shall be installed in saw cuts in the roadway made by a diamond or abrasive power saw. The slot width and depth shall be as indicated on the plans; however, in all cases, the slot shall be between 1/4" to 3/8" wide and 1-1/2" to 2-1/2" deep.

The saw cuts shall be overlapped so that the slot has full depth at all corners. All corners where Loop wires turn shall be diagonally cut so that there are no jagged edges or protrusions which may damage the wire. Prior to installation of the wire, the saw cuts shall be cleaned and dried. There shall be no cutting dust, grit, oil, moisture or other contaminants in the saw cut.

C736.04 LOOP WIRE: Loop wire and lead-in to the pull or aerial junction box shall be AWG #14 stranded Type XHHW gasoline and oil resistant single conductor insulated for 600 volts. XHHW wire shall meet the requirements of the latest edition of NEMA Standard WC-7 and Section 310 of the N.E.C. and IMSA 51-3, 1984. The Loop wire shall not have any cuts, nicks, abrasions or breaks in the insulation before or after installation in the slot. Any wire having defects in the insulation shall be replaced at no additional cost to the City.

Loop wire and lead-in to the pullbox or Loop detector shall be one continuous length of wire with no splices.

Loop lead-in from the curb or edge of pavement to the pullbox or conduit shall be installed in one inch conduit as indicated on the plans. The Loop lead-in for each loop shall be run in separate saw cuts from the loop to the pullbox.

The two loop lead-in wires shall be twisted two to five turns per foot from the loop to the point of termination.

The wire shall be placed in the bottom of the slot so that there are no kinks, curls, straining or stretching of the insulation. Subsequent turns of the loop shall be placed to assure vertical stacking of the wires.

Special care shall be taken in seating the wires so that the insulation will not be broken or abraded. No sharp tools such as screwdriver or metal object shall be used for this operation.

Loop location and configuration shall be as shown on the plans unless otherwise directed.

C736.05 LOOP SEALANT: All saw cuts with the wire installed shall be inspected and approved by the authorized representative of the Department of Public Works, unless written authorization is given by the authorized representative for permission to do otherwise, before the sealer is installed.

The sealant shall be encapsulant one-part urethane elastomeric compound requiring no mixing, measuring or application of heat prior to or during its installation. The sealant encapsulant shall be designed specifically for sealing detector loops in concrete or asphalt and have flow characteristics which insure complete encapsulation of the wires.

The encapsulant loop sealant shall have the ability to enable vehicular traffic to pass over the properly filled saw cut immediately after installation without stringing of the material. The encapsulant shall form a surface skin within 60 minutes at 75^{o}F at 50% Relative Humidity (RH).

The cured sealant encapsulant shall exhibit resistance to effects of weather, vehicular abrasion, motor oil, gasoline, antifreeze solution, brake fluid, deicing chemicals and salt normally encountered, in such a manner that the performance of the vehicle detector loop wire is not adversely affected. The sealant shall maintain its protective characteristics throughout the ambient temperature ranges experienced within the continental United States.

The Contractor shall install the sealer in strict adherence to the manufacturer's recommendations and these specifications.

The sealant shall be designed for roadway installation when the surface temperature is between 40^{o}F and 100^{o}F. No sealer shall be installed during inclement weather or under any condition which might introduce moisture into the saw slots.

A minimum of 75% of the sealant weight shall remain solid with no volume shrinkage after all solvent has evaporated. The sealant shall have an installation viscosity range of 5,000 to 85,000 cps.

The tack-free drying time shall be a maximum of 24 hours. The cure time of 1/8" thick film shall be a maximum of 30 hours. However, the under filling of the saw cut from 1/8" to 1/4" shall permit opening of the intersection immediately after the work has been completed.

The sealant shall have an elongation at break point property between the range of 400% to 700%. The tensile strength of the sealant shall be a minimum of 800 psi.

C736.06 SHIELDED CABLE: Shielded cable shall conform to IMSA Specification 50-2, AWG #14.

Shielded cable shall be installed continuous from the loop wire splice in the curbside pullbox to the cabinet mounted terminal strip allocated for detector lead-in cable termination. No splices shall be allowed between these points. The Contractor shall take adequate measures to protect cable from damage during handling and installation.

All splices in pullboxes must be carefully made to insure constant low resistance and must be insulated by means of a plastic casting splice kit to render a waterproof joint. Connections shall be soldered. The shielded drain wire in the pullbox shall be cut off flush and waterproofed so as not to come in contact with the pullbox or ground. The shielded drain wire shall be terminated with a ground wire and solidly grounded at the amplifier.

C736.07 MEASUREMENT: Loop detectors will be measured by the Linear Foot of sawed lot. Measurement will include sawing, installed wire, shielded cable and sealing. Measurement will be made from the curbside pull box and once around each loop perimeter.

C736.08 PAYMENT: Payment for loop detector will be made at the contract unit price under:

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C736(59)	Loop Detector	Linear Foot

SECTION C740
CONSTRUCTION LAYOUT

C740.01 DESCRIPTION: This section sets forth requirements for all construction layouts. The work consists of establishing lines and grades, taking all cross sections, and staking out the construction work in accordance with these specifications, plan details, and as directed. This work also includes but is not limited to, the layout of pavement striping and raised pavement markers, setting of line and grade for construction of super elevated curves or other applicable work items, and providing assistance in the coordination of utility relocation activities to ensure that the placement of relocated facilities will not conflict with required construction.

C740.02 CONSTRUCTION REQUIREMENTS: The Contractor shall establish all lines and grades and stake out all work on this project, including sufficient vertical and horizontal points for utility relocations for use by the Department and others.

The project survey control and horizontal alignment are based on NAVD 88 and the Louisiana State Plane Coordinate System (NAD-83--92), as determined by GPS observation. The construction plans and/or right-of-way map depicts the coordinates of sufficient survey control points to establish or re-establish horizontal control throughout the length of the project. The Contractor shall employ such methods as approved by the Director for the location of the project alignment and other necessary survey control points in accordance with currently acceptable surveying standards and practices. The Contractor shall verify the values of any intermediate bench marks shown on the plans, by checking against these bench marks.
The Contractor shall employ qualified engineering and surveying personnel experienced in layout and construction of highways and bridges to correctly establish and keep complete and comprehensive notebook records (field books) of all lines and grades necessary from initial layout to final acceptance.

The Contractor shall provide sufficient qualified staff, of at least one employee, on site during utility relocation periods. The Contractor shall provide any necessary survey work to ensure there are no utility conflicts with required construction. The Contractor shall provide daily documentation of utility relocation activities for incorporation into the project diaries.

The Contractor shall be liable for the accuracy of the initial layout and all subsequent alignment and elevations and shall, at no additional pay, rebuild, repair or make good any portion of the work found to be incorrectly positioned either horizontally or vertically at any time before final acceptance.

The Contractor shall notify the Director immediately of any apparent errors in the plans. The Contractor shall compute and provide template grades to the Director. In order to obtain pipe order lengths, the appropriate grades shall be provided to the Director two weeks in advance of the work.

Computer generated printouts will be allowed when approved. Stationing for overlay projects shall be set using an approved measuring device that is accurate to 0.1 percent. Stakes shall be placed every 100 linear feet and maintained by the Contractor throughout construction.

Layout of striping, raised pavement markers, and signs shall be done by methods approved by the Director prior to placement.

C740.03 MEASUREMENT: Measurements for determination of pay quantities will be made by the Department. Construction layout and utility oversight and coordination will be measured per lump sum, which will include all labor, materials and incidentals required to complete the work. No changes in the lump sum contract price will be made for minor additions or deletions to the scope of work.

C740.04 PAYMENT: Payment for construction layout, and utility oversight and coordination will be made at the contract lump sum price in accordance with Table 740-1.

Payment shall be made under:

Table C740-1

Construction Layout Payment Schedule

Percent of Total Contract Amount Earned	Allowable Percent of Lump Sum Price for Construction Layout
Staffed	25
25	50
50	80
75	95
100	100

ITEM NO.	PAY ITEM	PAY UNIT
C740(51)	Construction Layout	Lump Sum

SECTION C741
WATER MAINS

Water mains shall conform to all of the requirements of the General Specifications and Standard Plans of the Sewerage & Water Board (S&WB) of New Orleans (the latest revision), except as noted.

C741.01 GENERAL:

(a) The Contractor shall furnish all labor, supervision, materials and equipment required for the replacement of existing water mains with new mains, including house connections, valves, manholes, hydrants, and making necessary offsets, as required.

(b) All workmanship and materials shall conform with section F of the General Specifications of the S&WB and Dwg. No. 7260-W except as noted herein.

(c) The Contractor shall notify the Chief of Network Engineering of the Sewerage & Water Board in writing a minimum of three working days and not more than ten working days in advance of starting the job.

(d) All tie-ins to the existing water mains shall be made by the Contractor. The S&WB Forces shall close all valves and witnessing the tests and chlorination of the mains. Contractors shall not operate S&WB valves. Prior to making tie-ins, the Contractor shall notify residents at least 48 hours in advance of interruption of service.

(e) The existing utilities shown are approximate. The Contractor shall verify the location of utilities in the field and shall protect them from damage.

(f) Water and sewer services damaged by the Contractor shall be repaired by the S&WB at the Contractor's expense. The Contractor will be furnished a list of the locations of water and sewer house connections. This listing is from S&WB records and the listed locations could vary from the actual locations. It is the Contractor's responsibility to verify the location of these services and to protect them from damage. Furnishing this information should not be construed as a waiver of the Contractor's liability, but rather an attempt on the part of the S&WB to minimize the Contractor's hazards

C741.02.1 MATERIALS:

(a) All new water mains 4-inch through 12-inch, unless otherwise noted, shall be solid wall DR 18 Polyvinyl Chloride (PVC) pipe manufactured in accordance with AWWA C900, latest edition, and shall be U.L. listed. New water mains 16-inch through 30-inch, unless otherwise noted, shall be solid wall DR 18 PVC pipe manufactured in accordance with AWWA C905, latest edition, and shall be U.L. listed. Pipe shall be furnished in standard lengths (min. 16 feet) with integral cast bells or couplings using elastomeric gaskets conforming to the AWWA C900 or AWWA C905 specification.

(b) Ductile iron pipe, unless otherwise noted, shall be Special Thickness Class 52. All ductile

iron pipe shall be furnished with an asphaltic outside coating in accordance with AWWA C151 and a cement-mortar lining and seal coating, where applicable, in accordance with AWWA C104.

(c) Ductile iron fittings for water mains shall be mechanical joint restrained with external restraints such as Megalug as manufactured by EBAA Iron, Inc., or approved equal in accordance with the applicable requirements of AWWA C110 or C153 with rubber gasket joints conforming to AWWA C111. All fittings shall be furnished with an asphaltic outside coating in accordance with AWWA C151 and a cement-mortar lining and seal coating, in accordance with AWWA C104. All fittings, bends, tees, etc. shall have restrained joints in accordance with and for the length recommended by the manufacturer. All nuts, bolts and washers shall be manufactured of stainless steel conforming to the requirements of ASTM A276, Grade 316.

(d) Joint restraint devices shall be Megalug as manufactured by EBAA Iron, Inc., or approved equal. Restrained joints for pipe, valves and fittings shall be designed for a working pressure of 350 psi unless otherwise specified. Joints shall be capable of being deflected 4 degrees, after assembly.

(e) All buried ductile iron pipe and fittings shall be wrapped with 8 mils polyethylene wrap in accordance with AWWA C105. This polyethylene wrap shall cover all buried ductile iron pipe and fittings, including joints, and shall be overlapped a minimum of twelve inches between sections and sealed with black polyethylene tape.

C741.02.2 INSTALLATION

(a) The installation of the new water main shall conform to the manufacturer's recommendations, and all the applicable requirements of Section F of the S&WB General Specifications.

(b) Bedding and backfill for water mains and all appurtenances shall be pumped Mississippi River Sand, free of roots, wood, clay lumps, or any other foreign matter and shall meet the requirements of LaDOTD Louisiana Standard Specifications for Roads and Bridges (LSSRB) Section 1003.07, latest edition.

(c) The trench bottom shall be smooth and free from roots, rocks, etc. The pipe shall be laid on a smooth bed of pumped Mississippi River sand six inches in depth for the full width of the trench and extending to the top of the pipe.

(d) Special care should be given in placing and consolidating the sand under the pipe haunches to provide adequate side support to the pipe while avoiding displacement and misalignment. The remainder of the trench shall be spread in loose lifts not to exceed twelve (12) inches and shall be compacted by mechanical vibrating equipment to at least 95 percent laboratory maximum density (dry) as determined by ASTM D 1557 at a moisture content within the limits of plus five (5) percent to minus three (3) percent of optimum. Density tests shall be one (1) per lift per one hundred (100) feet of trench. Field density in-place tests will be performed in accordance with ASTM D 2922.

(e) The Contractor shall prevent foreign material from entering the water main and contaminating it during storage and construction. The Contractor will be responsible for the cleanliness of the main at all times. At the end of each work day or stoppage of work, the Contractor must provide

a temporary water tight plug at each open end. When the work is resumed, the trench must be free of water and dirt before the plug is removed.

(f) At points of tie-ins, valves, offsets and other locations where the use of ductile iron pipe is required, the Contractor shall furnish AWWA C150, Special Thickness Class 52 ductile iron pipe with rubber gasket joints. All ductile iron pipe and fittings shall have cement mortar lining in accordance with AWWA C104 and shall be wrapped with 8 mils polyethylene wrapped in accordance with AWWA C105. This tubular wrap shall cover all ductile iron pipe and fittings, including joints, and shall be overlapped a minimum of twelve inches between sections and sealed with black polyethylene tape.

(g) Offsets in water mains shall be made by the Contractor with ductile iron bends or ductile offset fittings. All ductile iron fittings and bends shall be mechanical-joint with retainer glands and shall have stainless steel nuts and bolts. Bends shall be 22.5 degree or 45 degree and no bends greater than 45 degrees are allowed unless specifically called out in the Plans.

(h) Water main offsets in the new main that are indicated on the drawings are considered main line fittings and payment is included in the price of the new water main. Water line offsets not indicated on the drawings are to be paid at the bid price for water line offsets.

(i) Where called for in the Plans, the water main shall be installed by horizontal directional drilling. PVC pipe shall meet the requirements of Section C741.02.1. Pipe material shall be submitted to Director for approval prior to installation. The directional drilling equipment is to consist of a directional drilling rig of sufficient capacity to perform the bore and pull back the pipe, a drilling, fluid mixing, delivery and recovery system of sufficient capacity to successfully complete the installation, a drilling fluid recycling system to remove solids from the drilling fluid so that the fluid can be reused (if required), a Magnetic Guidance System (MGS) or "walkover" system to accurately guide boring operations, a vacuum truck of sufficient capacity to handle the drilling fluid volume, and trained and competent personnel to operate the system. All equipment must be in good, safe condition with sufficient supplies, materials and spare parts on hand to maintain the system in good working order for the duration of this project. The Contractor shall be responsible for appropriate disposal of any drilling fluid used in the process.

C741.02.3 LUBRICANT FOR GASKETED PIPE AND FITTINGS

(a) Lubricant shall be suitable for potable water systems and shall conform to and be certified by both of the following standards:

ANSI/NSF 14: Plastic Piping System Components and Related Materials
ANSI/NSF 61: Drinking Water System Components – Health Effects

(b) Lubricant shall be nontoxic and suitable for potable water systems, non-corrosive and be non-flammable. Lubricant shall be an emulsified polymer based product, specifically formulated to be water-soluble without causing turbidity. Lubricant shall not transfer taste and/or odor to the new water main installations. Lubricant shall not promote bacterial growth and be safe for use on all metal and plastic pipes. Lubricant shall be easily flushed from the line and be non-reactive to chlorinated water. Lubricant should work easily on both wet and dry surfaces.

The use of oleate-based lubricants is not permitted for new water main installations due to odor and taste transfer problems.

C741.02.4 VALVES, VALVE BOXES, AND VALVE MANHOLES

(a) Valves shall be procured by the Contractor. Valves 4 in. to 12 in. shall be S&WB R.D. Wood Gate valves as shown in S&WB Dwg. 11897-W-62 or American RD Rotating Gate Disc Valve C-500 with adjustable packing. Valves 16 in. and larger shall be American RD gate valves. Valves shall have raised pattern letters "SEWERAGE & WATER BOARD" on the body of the valve. Valves must turn clockwise to open.

(b) Valves 4" to 12" shall be installed as shown on S&WB Drawing 6179-F-2.

(c) Existing valves that are replaced or no longer needed shall be removed and delivered to S&WB Central Yard, 2900 Peoples Avenue, at no direct pay.

(d) Valve Manholes for valves up to and including 12" shall be brick and installed as shown on S&WB Drawing No. 6179-F-2. Water manhole casting and covers shall conform to S&WB Drawing No. 3143-E-1.

(e) Valve Manholes for valves 16" and larger shall be as shown in the details included in the plans.

(f) Existing manholes that are replaced or no longer needed shall be abandoned in accordance with S&WB Drawing No. 8180-SD, at no direct pay.

(g) Existing manhole castings and covers that are replaced or no longer needed shall be removed and delivered to S&WB Central Yard, 2900 Peoples Avenue, at no direct pay.

(h) Valve boxes shall be installed as shown in S&WB Drawing 6179-F-2.

C741.02.5 FIRE HYDRANTS

(a) Fire Hydrants shall conform to at least one of the following: (1) 5 in. Breakaway Fire Hydrant Bronze Trim, as detailed in S&WB Dwg. No. 11825-W-62 or, (2) 5½ in. American-Darling Co.'s B-62-B or, (3) S&WB Mueller Hydrant A473 as detailed in Mueller Dwg. No. FH285 or (4) 5 in. New Orleans HYBRID-2 as detailed in Kennedy Valve Dwg. No. 81661-HYBRID-2. For details of setting hydrants, see S&WB Dwg. No. 6179-F-2.

(b) New fire hydrant leads shall be 6" solid wall DR 18 PVC pipe manufactured in accordance with AWWA C900, and shall be included in the water main unit price per linear foot. All hydrant lead joints shall be restrained.

(c) Existing hydrants that are removed shall be delivered to the S&WB Central Yard, 2900 Peoples Avenue, at no direct pay.

(d) Any fire hydrants existing or new and not in service must be covered, firmly secured and identified as being "Not in Service" at no direct pay.

C741.03 SERVICE CONNECTIONS:

(a) No direct tapping of the new water main will be permitted for making house service connections. Service saddles suitable to use with PVC pipe shall be used; i.e., Clow No. 3407 (all bronze) or JCM 407 Series with 2 bolts, or J. Jones J-966 (all bronze), or approved equal. The Contractor shall use only shell type hole cutter that will retain the coupon or chips and is designed to accommodate walls equal to pressure class 200.

(b) The Contractor shall replace all existing house water connections from the new main to the meter. There shall be no splicing allowed of new or existing water service connections. Existing services shall be tied into new mains using a service saddle and corporation cock.

(c) Existing 5/8", 3/4" and 1" water house connections to be replaced shall be replaced with 1" Polyethylene (PE) tubing from the main to the meter (see S&WB Dwg. Nos. 7134-W and 7134A-W). All other existing water house connections shall be replaced with the same size as the existing connection, unless otherwise noted

(d) All Polyethylene (PE) tubing through 2" shall be PE 3406, DR9, conforming to ASTM D2737.

(e) All Bronze/Brass fittings, connectors, corporation stops and appurtenances used in conjunction with PE tubing shall be of domestic manufacture, SHALL BE MADE OF LEAD FREE BRONZE/BRASS, and meet all requirements of AWWA, ASTM, and ANSI for use in the potable water distribution systems.

(f) Existing 4" through 8" water house connections to be replaced shall be replaced with solid wall DR 18 Polyvinyl Chloride (PVC) pipe manufactured in accordance with AWWA C900, from the main to the meter.

C741.04 INSPECTION:

(a) After the award of the Contract, the Contractor's representative, in the company of representatives of the Department of Public Works and the Sewerage & Water Board will inspect all meter boxes and list the condition of each and what corrective action is required.

(b) It is the Contractor's responsibility to schedule the meter box inspection prior to the start of construction. If no pre-construction inspection is performed, it will be assumed that all meter boxes were in good condition prior to the start of construction. Any required repairs will be at the Contractor's expense.

(c) Prior to final acceptance, all meter boxes located within the limits of this project shall be in good repair, at proper grade, properly aligned and cleaned of mud and debris. The types of repair as specified in the bid items and noted in the pre-construction inspection will be paid per each at the price bid in the proposal. The Contractor shall be paid for one bid item only for each meter box. Required repairs which were not noted at the pre-construction inspection will be assumed to be the result of the Contractor's negligence and will be repaired at his expense.

(d) All inspection of the water main and related appurtenances will be performed under the inspection of, and to the satisfaction of, the S&WB. Final acceptance of the water system is subject to a one-year maintenance period following the substantial completion date of the contract accepted by the S&WB.

C741.05.1 HYDROSTATIC TESTING:

(a) The Contractor shall provide and install all materials in accordance with S&WB Dwg. Nos. 7004-W and 7005-W, latest revision. The test plugs are to be caps or plugs as required and shall be secured to the pipe ends. The test plugs become the Contractor's property after their use. Prior to commencement of the hydrostatic testing, all pipes to be tested should be filled with water a minimum of twenty-four hours prior to testing in order to minimize absorption of water by the inner surface.

(b) The Contractor shall make a hydrostatic test of the main when the entire main has been laid, including service connections, valves and hydrant leads, and all apparent defects in the main, coating, joints, etc., have been repaired as described in Paragraph F-15 of the S&WB General Specifications. Testing of only a portion of the main will be done only with the approval of the S&WB. The Contractor shall provide all the equipment and all the labor required for filling and emptying the main and measuring the pressure and leakage. The Contractor's test setup shall include provisions for the Sewerage & Water Board to install their own pressure gage so that the Contractor's pressure readings can be verified.

(c) All valves in the system shall be wide open so that pressure will come on the flanges and the test plugs which close the ends of the main and its branches, and not on the valve discs.

(d) The main shall be filled from the nearest hydrant, or from other sources of supply where hydrants are not available, to the flange outlet in the test plug. When the main is completely filled with water to the satisfaction of the Director, the Contractor shall close the air cocks. He shall apply a hydrostatic pressure of 100 psi on the water main system, including fire hydrants, fire hydrant leads, valves, and service connections and shall maintain this pressure for a minimum period of (2) two hours with no pressure loss.

(e) If leakage develops, the Contractor shall locate the leaks and repair them, working only from outside the main and using only such methods as approved in advance by the S&WB's Engineer.

(f) It is the intent of these specifications and of the contract based thereon, that all pipe joints be water tight under all service conditions. Any and all leaks from improperly laid or defective joints which are discovered during the leakage test or tests, or at any time prior to the elapse of one year following the final acceptance by the S&WB of the entire work, will be repaired by and at the expense of the Contractor.

(g) Hydrostatic testing shall be performed by the Contractor under the direct supervision of and to the satisfaction of the S&WB Engineer, at no direct pay.

C741.05.2 CHLORINATION:

(a) The Contractor shall not proceed with the chlorination process until successfully passing the

hydrostatic pressure test and given authorization to proceed by the S&WB Engineer.

(b) The Contractor shall use the continuous feed method of chlorination as described in AWWA Standard C651. The tablet method and the slug method are not acceptable.

(c) The Contractor shall use either sodium hypochlorite or calcium hypochlorite to provide the disinfectant for the chlorination process. If calcium hypochlorite is used, the Contractor shall pre-mix the calcium hypochlorite into solution before application. All hypochlorite raw materials must be certified as suitable for the treatment of drinking water by an accredited certification organization in accordance with ANSI/NSF Standard 60, Drinking Water Treatment Chemicals – Health Effects.

(d) The Contractor shall flush the mains prior to the chlorination. Flushing shall be done at flow rates sufficient to provide a velocity in the water main of at least 2.5 feet per second to remove particulate debris prior to disinfection. During this flushing process, the Contractor shall make sure there are no air pockets present within the system.

(e) The Contractor shall follow AWWA Standard C651, latest revision, these Special Specifications and shall meet the requirements of the Louisiana Department of Health and Hospitals (LA-DHH) for installation and disinfection of potable water mains. Transporting, storage, and handling of all disinfection products, utilized for chlorination, shall be performed in accordance with all applicable Federal, State, Local Laws and Regulations.

(f) The Contractor shall chlorinate the new water main system, including fire hydrants, fire hydrant leads, valves, and service connections, under the direct supervision of the S&WB, such that the minimum chlorine concentration throughout the system is 50 mg/l. The chlorinated water shall be retained in the pipe for 24 hours for water mains less than 30 inches in diameter, and for 48 hours for water mains greater than or equal to 30 inches in diameter. After the required retention time, the chlorinated residual shall be at least 5 mg/l free chlorine, as measured by the S&WB. If the residual is less than 5 mg/l at any point in the system, the initial flushing and disinfection procedure shall be repeated by the Contractor until a 5 mg/l free chlorine residual is obtained. The Contractor shall contact the S&WB Water Purification Department (504) 865-0572, a minimum of 48 hours prior to chlorinating the new main to schedule the sample collection.

(g) The maximum length of water piping that can be chlorinated at one time is 2,000 (two thousand) linear feet.

(h) The Contractor shall flush the chlorinated water from the new main using potable water. Disposal of chlorinated water shall be in accordance with AWWA Standard C651 and all federal, state, and local requirements. The Contractor's chlorination and flushing setup shall include provisions for the S&WB to collect a sample, via a ¾" faucet without hose bib threads, on the inlet and each discharge stand pipe.

(i) The S&WB shall collect and analyze samples for coliform bacteria, chlorine residual, and turbidity from all pipe extremities and from representative points. All samples must be free from contamination by coliform bacteria and have acceptable turbidity levels as determined by the S&WB. The Contractor shall be responsible for final flushing and coordinating sample collection

by the S&WB.

(j) Chlorination and flushing of water mains shall be performed by the Contractor, at no direct pay. Also, no additional payment will be allowed for providing taps for chlorine injection and/or flushing if necessary.

(k) In the event that a new water main tests positive for coliform bacteria following chlorination, the Contractor will be responsible for reflushing the main and coordinating resampling for coliform analysis. If the second set of coliform samples test positive, the Contractor shall be required to repeat the chlorination procedure. A fee may be imposed on the Contractor for the additional supervision, sampling, and analysis required of S&WB employees as the result of the necessity of resampling and/or re-chlorination.

C741.05.3 TIE-INS

(a) The Contractor shall tie-in the new water main within 72 hours of receiving notification of acceptable laboratory test results from the S&WB. If the Contractor fails to complete the tie-in within 72 hours, additional flushing and re-testing for coliform bacteria by S&WB shall be required. Under no circumstances will the Contractor be allowed to make a tie-in to the existing water distribution system until acceptable laboratory test results have been obtained by the S&WB. All tie-ins shall be performed under the direct supervision, and to the satisfaction, of the S&WB. A fee may be imposed on the Contractor for the additional supervision, sampling, and analysis required of S&WB employees as a result of the necessity of resampling and/or re-chlorination.

(b) The tie-in shall be configured in such a manner to require 16 linear feet of pipe or less. The S&WB does not allow installation of pipe runs greater than 16 linear feet without hydrostatic pressure testing and chlorination. All pipe used in the tie-in shall be thoroughly cleaned and swabbed with a 1-5 percent hypochlorite disinfecting solution just prior to being installed, as recommended by AWWA C651.

(c) The S&WB forces shall be responsible for the closure of all water valves. Contractors shall not operate S&WB valves. The S&WB cannot guarantee a water-tight closure. The Contractor must work continuously and without interruption until the new piping is tied into the existing system and services are restored.

(d) Before the water service is interrupted, the Contractor shall:

1. Expose the existing water main at the tie-in location and verify the type, size, location, and elevation of the existing facilities.

2. Have sufficient materials, equipment and manpower available at the job site.

3. Verify materials on hand will meet the job needs after uncovering the existing mains.

4. Request a water test closure through the S&WB Networks Department (942-3891) a minimum of seven (7) working days in advance of the scheduled tie-ins.

5. Have notified all residents and the New Orleans Fire Department a minimum of forty-eight (48) hours in advance of interruption of service.

(e) After the tie-in is completed, the new line will be refilled under normal S&WB water main pressure (approximately 60 pounds per square inch). Tie-in piping will then be visually inspected for leaks and if any leaks are discovered shall be repaired by the Contractor using only such methods as approved by the S&WB, at the Contractors expense.

(f) The Contractor shall perform a final flush on the newly installed water main under the supervision of the S&WB Engineer to flush out the remaining free chlorine residual and fill the line with water representative of the quality in the distribution system prior to hydraulically connecting the new main to the distribution system

(g) All tie-ins shall be made by the Contractor, at no direct pay.

C741.06 AS-BUILT DRAWINGS: Prior to final inspection and testing of the system, the Contractor shall submit to the S&WB "as-built" drawings, at no direct pay, showing any change in line or grade from the original drawings, location of house service connections.

C741.07 PAYMENT: Payment for the accepted quantities will be made at the contract unit price.

(a) Payment for furnishing and installing New Water Mains shall be made at the contract unit price per linear foot, including main line fittings (bends, tees, etc.), fire hydrant leads, tie-ins, excavation, removal of existing pipe (if any), pumping as necessary to prevent contaminating the existing system, bedding, complete shoring, backfilling material, hauling and disposal of excavation material, and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. There shall be no direct payment for plugging and abandoning existing manholes and filling with flowable material (sand/cement mixture).

(b) Payment for furnishing and installing 1-inch through 2-inch Polyethylene Pipe for water house connections (adjustment/replacement) shall be made at the contract unit price per each, including excavation, backfilling, service saddles, corporation cock and removal of existing pipe (if any) and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. There shall be no direct payment for tie-ins to the main or meter. Minimum size of water house connections shall be 1”.

(c) Payment for furnishing and installing 4-inch through 8-inch PVC pipe for water house connections shall be made at the contract unit price per each, including, excavation, backfilling, and removal of existing pipe (if any) and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. There shall be no direct payment for tie-ins to the main or meter. PVC pipe for house connections shall meet the requirements of Section C741.02.01.

(d) Payment for furnishing and installing New Fire Hydrant shall be made at the contract unit price per each. including, excavation, backfilling, and removal of existing pipe (if any), and any other related or incidental items required to complete this item of work for which separate payment is

not provided for under other items in the Uniform Bid Form.

(e) Payment for furnishing and Installing Water Valves up to and including 12-inch shall be made at the contract unit price per each. Payment for the installation of valves shall include furnishing and installing all ductile iron pipe, mechanical joint retainer glands, gaskets, including stainless steel tee bolts and nuts, etc. for a complete installation and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. The cost for valve boxes indicated on the plans shall be included in the bid price of the valves.

(f) Payment for furnishing and Installing Water Valves 16-inch and larger shall be made at the contract unit price per each. Payment for the installation of valves shall include furnishing and installing all ductile iron pipe, mechanical joint retainer glands, gaskets, including stainless steel tee bolts and nuts, etc. for a complete installation and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form.

(g) Payment for furnishing and installing Water Main Offset shall be for offsets consisting of four (4) mechanical joint bends complete with retainer glands, stainless steel nuts and bolts and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form, and shall be made at the contract unit price per each. Water line offsets consisting of only two (2) bends will be paid for at one-half (1/2) the unit price bid. Offsets are paid when not indicated on the plans. There is no direct pay for offsets shown on the plans.

(h) Payment for Plug Existing Water Main and Fill With Flowable Material (sand/cement mixture) shall be made at the contract unit price per linear foot, shall include all necessary equipment to completely fill the abandon main with sand/cement and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form.

(i) Payment for Construction of New Water Valve Manholes for 4-inch through 12-inch valves shall be made at the contract unit price per each, including excavation, granular bedding, foundation slab, manhole casting and cover and backfilling and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. There shall be no direct payment for plugging and abandoning existing manholes and filling with sand.

(j) Payment for Construction of New Water Valve Manholes for valves 16-inch and larger shall be made at the contract unit price per each, including excavation, granular bedding, foundation slab, manhole casting and cover, valve box, and backfilling and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. There shall be no direct payment for plugging and abandoning existing manholes and filling with sand.

(k) Payment for Remove Mud and Debris from Inside of Water Meter Box shall consist of the removal of all mud or debris within a meter box that does not need adjustment or replacement, and shall be made at the contract unit price per each.

(l) Payment for Adjust Complete Water Meter Box to Grade shall consist of adjusting the meter box to grade by placing bricks, slate, or similar material under the meter box pan, and shall be made at the contract unit price per each. There shall be no separation between the upper barrel and the lower meter box pan. Any mud or debris within the box shall be removed before the upper barrel and lower pan have been adjusted. There will be no additional payment for removal of mud and debris under another item. Meter boxes shall be adjusted to grade in areas where the grade of the curbs and/or sidewalks is changed or as directed by the Director. If the water house connection needs to be replaced from the meter to the property line in order to adjust the meter box, the new water house connection shall be paid under the item, “Remove and replace water house connection (from meter to property line) (all sizes)”.

(m) Payment for Replace Broken Water Meter Box (5/8” to 1”) shall be made at the contract unit price per each, shall include any meter box replacement or any new meter box required and any other related or incidental items required to complete this item of work for which separate payment is not provided for under other items in the Uniform Bid Form. Installation shall be as shown on S&WB Drawing. No. 7134-W.

(n) There shall be no direct payment for salvaging existing valves, fire hydrants, manhole castings and covers, etc.

(o) All other items of work necessary to the performance of the project, for which no specific unit price and/or lump sum pay item is established, shall be considered and designated part of the construction, and the existing pay items shall be full compensation. Items including but not limited to, trench safety, traffic control, contract closeout, shop drawings, submittals, and office support shall be merged into the prices bid.

(p) There will be no direct payment for temporary water mains, temporary water service connections, and any related work including temporary tie-ins, removal of temporary work after installation of permanent work, and other incidentals. The cost of all work shall be included in the unit bid prices of water mains and house connections.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C741(51)(B)	6” New Water Main with Main Line Fittings	Linear Foot
C741(51)(C)(1)	8” PVC New Water Main with Main Line Fittings	Linear Foot
C741(51)(C)(2)	8” Ductile Iron New Water Main w/ Main Line Fittings	Linear Foot
C741(51)(C)(3)	8” PVC New Water Main with Main Line Fittings by Directional Drilling	Linear Foot
C741(51)(E)(1)	12" PVC New Water Main with Main Line Fittings	Linear Foot
C741(51)(E)(2)	12” Ductile Iron New Water Main w/Main Line Fittings	Linear Foot
C741(51)(F)(1)	16" PVC New Water Main with Main Line Fittings	Linear Foot
C741(51)(F)(2)	16” Ductile Iron New Water Main w/Main Line Fittings	Linear Foot
C741(51)(H)(1)	20" PVC New Water Main with Main Line Fittings	Linear Foot
C741(51)(H)(2)	20” Ductile Iron New Water Main w/Main Line Fittings	Linear Foot
C741(51)(I)(1)	24" PVC New Water Main with Main Line Fittings	Linear Foot
C741(51)(I)(2)	24” Ductile Iron New Water Main w/Main Line Fittings	Linear Foot
C741(51)(J)(1)	30" PVC New Water Main with Main Line Fittings	Linear Foot
C741(51)(J)(2)	30” Ductile Iron New Water Main w/Main Line Fittings	Linear Foot
C741(52)(A)	New 4" Valve	Each
C741(52)(B)	New 6" Valve	Each
C741(52)(C)	New 8" Valve	Each
C741(52)(E)	New 12" Valve	Each
C741(52)(F)	New 16" Valve	Each
C741(52)(H)	New 20" Valve	Each
C741(52)(I)	New 24" Valve	Each
C741(52)(J)	New 30" Valve	Each
C741(53)	Tapping Sleeve & Valve Assembly (Size)	Each
C741(54)	New Fire Hydrant	Each
C741(55)(A)	Replace 5/8’ to 1” Water House Connection with 1” Water House Connection (from Main to Meter)	Each
C741(55)(B)	Replace 1-1/2" Water House Connection (from Main to Meter)	Each
C741(55)(C)	Replace 2” Water House Connection (from Main to Meter)	Each
C741(55)(D)	Replace 4” Water House Connection (from Main to Meter)	Each
C741(55)(E)	Replace 6” Water House Connection (from Main to Meter)	Each
C741(55)(F)	Replace 8” Water House Connection (from Main to Meter)	Each
C741(55)(G)	Replace Water House Connection from meter to property line 5/8” to 1”	Each
C741(56)	Relocation of Fire Hydrant (In Existing Main)	Each
C741(70)	Additional Ductile Iron Fittings	Ton
C741(71)(B-01)	6” Water Line Offset up to 24”	Each
C741(71)(C-01)	8” Water Line Offset up to 24”	Each
C741(71)(C-02)	8” Water Line Offset over 24”	Each
C741(71)(E-01)	12” Water Line Offset up to 24”	Each
C741(72)(B-02)	6” Water Line Offset over 24”	Each
C741(72)(E-02)	12” Water Line Offset over 24”	Each
C741(73)	Adjust Water Valve Box	Each

C741(74)(A)	New Water Valve Manhole (4” through 12" Valves)	Each
C741(74)(B)	New Water Valve Manhole (16” through 20” Valves)	Each
C741(74)(C)	New Water Valve Manhole (24” through 30” Valves)	Each
C741(75)	Remove Mud and Debris from Inside Water Meter Box	Each
C741(76)	Adjust Complete Water Meter Box to Grade	Each
C741(77)	Replace Broken Water Meter Box (5/8”) to (1”)	Each
C741(78)(A)	Plug Existing Water Main 4” through 12” and Fill with Flowable Material (Sand/Cement Mixture)	Linear Foot
C741(78)(B)	Plug Existing Water Main greater than 12” and Fill with Flowable Material (Sand/Cement Mixture)	Linear Foot

SECTION C742
SEWER LINES

C742.01 SEWERAGE CONSTRUCTION: The work shall be in accordance with the Sewerage & Water Board Specifications and Standard Plans except as noted.

C742.02 GENERAL:

(a) The Contractor shall furnish all labor, materials, equipment and supervision required for:

- Restoration of existing sewer mains by point repair.
- Replacement of existing sewer mains between manholes including tie-in into existing system.
- Relocation of existing sewer mains because of conflicts.
- Installation of new sewer mains, sewer house connections and manholes.
- Replacement of damaged sewer house connections and manholes.
- Installation/rehabilitation of manholes and cleaning of new replaced or restored mains and manholes.

All work to be done on Sewerage Systems will be as shown on the plans and as directed by the Director. All workmanship, materials and tests shall conform with Section D of the General Specifications of the Sewerage & Water Board and Sewerage & Water Board Standard Drawing No. 7260-S, except as noted hereinafter. The Contractor shall notify the Chief of Network Engineering of the Sewerage & Water Board in writing not less than three or more than ten working days in advance of starting the job, in order to allow for scheduling the inspection of the work. Failure to do so prior to starting work will result in the Contractor being required to expose the bedding on all pipe previously installed without Sewerage & Water Board inspection.

(b) All workmanship and materials required to perform this work, shall conform to the current General Specifications of the Sewerage & Water Board and the Department of Public Works except as noted hereinafter.

(c) The Contractor performing work covered in this section shall be required to coordinate his operations with the Sewerage & Water Board (Chief of Network Engineering) and other utilities prior to making any excavation so that the location of their services can be identified. The Contractor shall exercise caution in making excavations to avoid damage to these services and other utilities.

(d) The Contractor will be furnished with a list of the locations of water and sewer house connections from the Sewerage & Water Board. It will be the Contractor's responsibility to verify the location of these so as to avoid damage. Furnishing this information should not be construed as a waiver of the Contractor's liability, but rather an attempt on the part of the S&WB to minimize the Contractor's hazard. The existing house connections submitted in the lists are from S&WB records and could vary from the actual location. Any damage to the existing water, sewer and drain connections resulting from negligence will be repaired by the S&WB at the expense of the Contractor. The Contractor is also responsible for damage to other utilities and the property of others.

(e) Sewer house connections shall be tied into the new mains and replaced with new connections where needed.

C742.03 INSTALLATION AND REHABILITATION OF SEWER MAINS:

(a) GENERAL: Work under this section shall consist of furnishing all labor and materials for the replacement, relocation and/or installation of sewer mains, installing new house connections, point repairs and performing all operations required for improving the sewer system. The Contractor shall provide the necessary dewatering and by-passing required during execution of this work at no direct pay.

(b) MATERIALS AND METHODS: Pipe material for sewer mains shall be solid wall polyvinyl chloride (PVC) pipe. The solid wall PVC pipe 6" through 15"shall be manufactured in accordance with ASTM D-3034 specifications for a special gravity sewer pipe dimensions ratio (SDR) of 26. The fittings (tees, wyes, etc.) and bell stock for truss and solid wall PVC pipe shall have a thickness not less than that of the SDR-35 solid wall PVC pipe of the same inside diameter. PVC Sewer Mains sizes 18" through 27" shall be solid wall, PVC pipe conforming to ASTM F-679, Class T-1. PVC pipe shall be type PSM Vinyl Chloride (PVC) standard lengths with integral cast bells and elastomeric gaskets as recommended by the manufacturer and ASTM D-3212.The Sewerage & Water Board reserves the right to approve the type of material.

The maximum allowed deflection for installed PVC sewer pipe is per the manufacturer recommendations. Newly installed pipe that exceeds this allowable deflection shall be removed and replaced with new pipe and reinstalled as per the above specifications at the Contractor's expense. The S&WB reserves the right to mandrel any and/or newly installed PVC sewer pipe. The Contractor will install the pull lines and pass the mandrel through the mains selected by the S&WB. The S&WB will provide the mandrels for all tests. The mandreling tests will occur after compacted backfill of the trenches. The Contractor shall bear the cost of mandreling re-testing if required and will be assessed $100.00 for each occurrence in each section between manholes. In addition, cleaning and TV/video of the new PVC sewer lines (either in-service or not) will occur during final inspection after all paving is completed to verify the absence of construction debris. The Contractor shall bear all costs of cleaning and TV/video test or re-testing. It is required that a S&WB representative and the Contractor witness the actual mandreling test(s) and witness the real-time cleaning and TV/video test(s). The S&WB does not desire a copy of the videotape.
Bedding and foundation for mains shall conform with S&WB Drawing No. 4697-E5-A except as noted below. Backfill and drainage fabric for mains shall be as noted below. Standard sheeting and bracing shall comply with DWG. 4697-E5A of the S&WB General Specifications. The same type and size pipe material must be installed between manholes.

Installation of the solid wall PVC pipe shall conform to Section D of the Sewerage & Water Board General Specifications, "The Construction of Sewer" and the Plastic Pipe Association Specification UNI-B 78, "Recommended Practice for the Installation of Polyvinyl Chloride (PVC) Sewer Pipe." The trench bottom shall be relatively smooth and free from rocks, roots, etc. After the sheeting and/or foundation lumber is placed, the pipe shall be laid on a smooth bed of approved bedding

material mentioned below, compacted to a density of not less than 95% relative density, six inches deep for the full width of the trench.

The bedding material shall be extended to six inches above the top of the pipe, well compacted (hand or mechanical) in six inch layers to not less than 95% relative density, as shown on the Standard Plans of the Department of Public Works. The bedding material shall be placed and consolidated under the pipe haunches to provide maximum side support to the pipe while avoiding displacement and misalignment of the pipe.

Bedding material shall be 100% crushed aggregate listed on Qualified Product of the Louisiana Department of Transportation and Development and conforming to ASTM D2321, class 1A Angular Material (1/4" to 1 ½") and ASTM No. 57. The Sewerage & Water Board reserves the right to approve the type of bedding material.

Backfill material shall be pumped sand and shall be placed at or near optimum moisture content and compacted according to one of the following procedures:

1. Backfill material shall be placed in layers not to exceed 12 inches. Each layer shall be compacted to a minimum of 95% of maximum density using approved mechanical compaction equipment. Or,

2. Backfill material may be placed in layers not exceeding 12 inches by thoroughly compacting each layer to 95% maximum density at or near optimum moisture content using approved mechanical compaction equipment, prior to placing a subsequent layer.

The above backfill material and the compaction procedures shall be applied also for any service connections, and point repairs.

Drainage fabric shall be installed around the bedding and under the sand backfill according to the Standard Plans. Fabric shall extend a minimum of twelve (12") inches on each side of the trench and shall be secured to each side in a manner acceptable to the Director.

The Contractor shall provide the Director a sample of the fabric to be used on the project along with a copy of the manufacturer's minimum requirement specifications prior to the start of construction.

The drainage fabric shall be installed around the bedding and under the sand backfill according to the Standard plans.

(c) REPLACEMENT AND RELOCATION OF EXISTING SEWER MAINS, INSTALLATION OF NEW SEWER MAINS BETWEEN MANHOLES: The Contractor shall furnish all materials, equipment and labor to remove the existing deteriorated main, (if any) install mains and fittings (wyes, tees, etc.), including appurtenances such as tie-ins to existing system, lumber foundation, bedding, backfilling, necessary dewatering and by-passing, during the execution of this work.

Where the sewer main is relocated, the existing abandoned main must be filled and plugged where shown on the plans. Sand shall be filled into the sewer line to avoid caving in of the sewer line.

All workmanship, materials and tests shall conform to Section D of the General Specifications of the S&WB, except as noted otherwise. The Contractor may use more than one crew in performing work in various sections of a system at a given time, provided he has the approval of the Director.

The new sewer mains and house connections shall be installed at the elevations and locations indicated on the plans, unless changed by the S&WB. The Contractor shall schedule his work so that the sewer mains and house service connections between two manholes are completed before moving to another location (this will minimize the spillage of raw sewage into an open trench). The Contractor shall isolate the block where the work is in progress by plugging the upstream and downstream manholes. Should the sewerage build up to within three feet of the upstream manhole, or if directed by the S&WB, the Contractor shall pump the sewer liquid to the downstream manhole through by-pass pumping. No mains or lines shall be left open overnight; a temporary tie-in shall be made between the end of the new main and the existing, and plugs at manholes shall be removed so as to allow flow to continue until work is resumed.

Where it is necessary to connect the sewers to existing manholes, the existing short bell pieces remaining in the wall of the manhole shall be broken out. A new short bell piece shall be inserted to the full thickness of the walls and permanently grouted in place (see S&WB Dwg. 6178-B6). The new short bell piece shall be a sand impregnated PVC stub grouted with a type three, high early strength cement, or quick setting EMBECO or similar material.

If a PVC pipe is to be connected to a manhole or other concrete or brick structure, the Contractor shall use a sand impregnated PVC stub, grouted with cement grout as specified above, for the manhole connection.

(d) POINT REPAIRS OF EXISTING SEWER MAINS: The Contractor shall make point repairs to the lines at specific locations shown on the drawings and as listed in the proposal.

Point repairs shall be made by either wet or dry type and shall conform to Section XII of NASSCO (National Association of Sewer Service Companies). The Contractor shall make an excavation to expose a base "ten (10') linear feet" of main, per point repair. Any additional footage of repair beyond the ten foot minimum for each point repair shall be approved by the Director.

The Contractor is required to have all materials and equipment on hand prior to the start of excavation so that there will be a minimum of inconvenience to the residents. All trenches must be backfilled at the end of the day.

(e) SEWER HOUSE CONNECTIONS: New or replacement sewer house connections, where required, shall be six inch pipe extended from the main to the back of curb or to a point directed by the Director. Bedding and foundations required under sewer mains are <u>not</u> required under six (6") inch sewer house connections.

The use of saddles to connect the house service to the main will not be permitted; all such connections shall be made using wye to tee fittings.

The need for replacing these house services beyond the wye or tee connection will be determined by the Director. If the pipe beyond the wye or tee is in good condition, a tie in will be made at the fitting (wyes, tees, etc.). If the pipe beyond the wye or tee is in poor condition, a new house service will be installed from the main to the back of curb or to a point directed by the Director and tied into the existing house service at the point. All pipe and fittings shall be of the same material as the main, unless approved by the S&WB. The connection of any two dissimilar materials shall be accomplished by the installation of a "No-Hub" coupling, consisting of a neoprene sleeve and bushing adaptor and two stainless steel bands with STAINLESS STEEL SCREWS. The coupling shall be manufactured in strict accordance with Cast Iron Soil Pipe Institute Specifications C-301, latest revision, as manufactured by Tyler Pipe Company, Mission Clay Products Corps., Fernco, or approved equal.

Where existing or proposed subsurface facilities conflict with existing sewer house connections, these same connections shall be adjusted to provide for adequate clearance in accordance with the S&WB Standard Specifications. No syphons will be permitted. Adjustment of sewer house connections shall comply with the above specifications for replacement of sewer house connections.

(f) SANITARY SEWER MANHOLE: New sanitary sewer manholes required when installing new sewer mains or relocating existing sewer mains shall be constructed in accordance with the applicable sections of the S&WB General Specifications and S&WB Standard Drawings No. 6178-B6, No. 6178-B-6A, and 3143-E-1.

(g) INSPECTION: At the completion of the point repair or installation of mains between manholes, and prior to final acceptance, the S&WB may inspect the mains with a remote control television unit. The Contractor shall assist by notifying the residents to refrain from use of these services during the inspection. The Contractor will be required to repair at his expense and in an approved manner, all defects in his workmanship disclosed by these tests and inspections before final acceptance.

C742.04 MEASUREMENT: Sewer mains will be measured in place and the length determined by measuring from center to center of manholes or other subsurface structures of which they form a part.

Depth of sewer mains for payment purposes shall be determined by measurement from the invert to the top of casting at original existing grades of connecting manholes. Depth of manholes shall be measured from invert to the top of casting.

C742.05 PAYMENT:

(a) Payment for relocation, replacement and restoration of existing sewer mains or installation of new sewer mains shall be made at the contract unit price per linear foot of the size and depth, which includes excavation, pumping, as necessary, complete shoring, foundation lumber, bedding, installation of new main, including fittings, backfill, drainage fabric and tie-ins. If the existing sewer main is to be replaced, the cost shall include removal of the existing sewer main.

(b) Payment for "install sewer manhole" shall be made at the contract unit price per foot high, including excavation, granular bedding and backfilling. If the existing manhole is to be replaced, the cost shall include removal of the existing sewer manhole.

(c) Payment for "replacing manhole casting and cover" shall be made at the contract unit price per each including removal of the existing sewer manhole casting, installing the new casting at the specified grade and backfilling the excavation with approved backfill material. Adjustment to grade of the manhole casting shall be included in the cost of replacement.

(d) Payment for "point repair of existing sewer mains" shall be made at the contract unit price per each of the size and depth specified, including excavation, foundation lumber, bedding, drainage fabric, backfill, complete shoring, pumping as necessary and tie-ins. Payment for point repair beyond ten (10') feet shall be made at the contract unit price per the linear foot, including the above works.

(e) Payment for "new sewer house connection from main to back of curb" shall be made at the contract unit price per each of the size specified including installation of a wye or tee in the main, PVC pipes, fittings, a cap behind the curb, excavation and backfill.

(f) Payment for "replacing existing sewer house connection from existing main to back of curb" shall be made at the contract unit price per each including the installation of PVC pipe, fittings, excavation, backfill, and tie-ins from the existing wye or tee to the existing sewer house connection back of curb.

(g) Payment for "reconnecting existing sewer house connection to new main" shall be made at the contract unit price per each including installation of a new tee or wye into the main, removal and rep1xcement of up to three feet of the existing, excavation and backfill.

(h) Payment for "reconnecting existing sewer house connection to new main and extend to back of curb" shall be made at the contract unit price per each including the installation of PVC pipe, fittings, excavation, backfill, tie-in, and installation of a new wye or tee in the new main, from the new wye or tee to the existing sewer house connection back of curb.

(i) "Replacing existing sewer house connection beyond back of curb." If directed by the Director to replace the sewer house connections in (f) or (h) beyond back of curb, payment for this item shall be made at the contract unit price per linear foot per any additional footage beyond back of curb.

(j) "Adjust Sewer House Connections" includes removing and replacing up to 15 feet of existing sewer house connection where required to avoid conflict with new water, drain, or other utility line, including tie-ins at both ends, fittings, excavation, installation, backfill, no siphon permitted. Payment for this item shall be made at the contract unit price per each.

(k) Payment for "pipe lining" shall be made at the contract unit price per linear foot of the size and method specified to; (1) clean and inspect the existing pipe to be sure that the liner can be properly installed, (2) install the liner in accordance with Special Specifications; and (3) clean up and restore any damage caused by the lining process.

(l) Payment for "cut liner to restore existing service connections" shall be made at the contract unit price per each of the size and the method specified. If the lining method for restoring service connections requires excavation, the price shall include all excavation, backfill and surface restoration.

Payment will be made under:

ITEM NO.	PAY ITEM	PAY UNIT
C742(51)	Install Sewer Mains (Size & Depth)	Linear Foot
C742(55)	Install Sewer Manhole	Foot High
C742(56)	Replace Sewer Manhole Casting	Each
C742(57)	Sewer Point Repair up to Ten Feet (Size & Depth)	Linear Foot
C742(58)	Sewer Point Repair beyond Ten Feet (Size & Depth)	Linear Foot
C742(59)	New Sewer House Connections from Main to Back of Curb (Size)	Each
C742(60)	Replace Existing Sewer House Connection from Existing Main to Back of Curb	Each
C742(61)	Re-connect Existing Sewer House Connection to New Main up to Three Feet	Each
C742(62)	Re-connect Existing Sewer House Connection to New Main and Extend to back of Curb	Each
C742(63)	Replace Existing Sewer House Connection Beyond back of Curb	Linear Foot
C742(64)	Adjust Sewer House Connection	Each
C742(65)	Pipe Lining (Size & Method)	Linear Foot
C742(66)	Cut Liner to Restore Existing Sewer House Connection (Size & Method)	Each

SECTION C743
TESTING LABORATORY SERVICES

C743.01 GENERAL:

(a) An independent accredited testing laboratory shall be retained by the City of New Orleans for the purpose of sampling and testing materials or performing inspections on a given project.

(b) Cooperation of the Contractor: The Contractor shall cooperate with the designated testing laboratory and shall:

(1) Make available without cost, samples of all materials to be tested in accordance with applicable standard specifications.

(2) Furnish such nominal labor and sheltered working space as is necessary for designated testing laboratory to obtain samples at the project site.

(3) Advise the designated testing laboratory of the identity of material sources and instruct the suppliers to allow tests or inspections by the designated testing laboratory.

(4) Notify the designated testing laboratory sufficiently in advance of operations to allow for completion of initial tests and assignment of inspection personnel.

(5) Notify the designated testing laboratory sufficiently in advance of cancellation of required testing operations. The Contractor shall be responsible to the Director for charges due to failure to notify, if requirements for testing are cancelled. The Contractor shall also be responsible to the Director for charges due to failed tests. The Director can withhold payment to cover the cost of these charges.

(6) Provide curing facilities for initial curing of concrete cylinders at the job site in accordance with the requirements ASTMC-94.

(c) Test Methods: Tests and inspections shall be conducted in accordance with the latest applicable A.S.T.M., A.C.I., A.A.S.H.T.O., or La. D.O.T.D. requirements, or the requirements of other recognized authorities.

(d) Authority and Responsibility of the Testing Laboratory: The designated testing laboratory does not have the authority to accept or reject work for the Director. It is their duty to inform the Contractor and the Consulting Engineer's representative (CER) at the job site of any tests or conditions that do not meet the project specification requirements. The CER has the authority and duty to reject materials and/or workmanship that do not comply and to so notify the Director.

(e) Test Reports: The designated testing laboratory shall promptly submit written reports of each test and inspection made to the Director, Contractor and to such other parties that the Director may specify.

C743.02 PORTLAND CEMENT CONCRETE: Tests and Inspections:

(a) Mix Design:

(1) The designated testing laboratory shall review the contract mix design submitted for compliance within the General Specification requests and ACI 318-94, Chapter 5 or latest revision.

(2) Regardless of what method is employed, the following tests are required prior to use on a given project:

A.S.T.M. Sieve Analysis for Fine & Coarse Aggregates

(3) Certificates of Delivery which include test results shall be submitted by the concrete producer for cement, fly ash and additives to the designated testing laboratory for review. These certificates must certify that the material conforms to the specifications.

(b) Batch Plant:

(1) Prior to initial start-up of pavement operations for the project, the designated testing laboratory shall make themselves familiar with the concrete suppliers batch plant to determine if the operation substantially conforms to the requirements of A.S.T.M. C94. Any substandard conditions observed shall be immediately reported to the Director and the Contractor.

(2) Plant inspector is not required to be present at the plant during production. However, the Director may require an inspector be provided periodically at his discretion.

(3) The plant must be approved prior to beginning production for a given project. This approval will be given by the Director and/or his representative. The testing laboratory shall be responsible to inform the Director of any reasons or conditions that would adversely affect the plant's approval. Conditions for approval shall include but not be limited to the following:

(i) Ability to comply with A.S.T.M. C-94 (latest revision) Standard Specifications for Ready Mixed Concrete.

(ii) Whenever fly ash is used, the plant shall have a separate silo or bin to store the fly ash.

(iii) Whenever ground granulated blast-furnace GGBF slags are used, the plant shall have a separate silo or bin to store the slag.

(4) Prior to and periodically during construction, the designated testing laboratory shall sample and test aggregates proposed for use in concrete to determine their compliance with these specifications.

(c) Roadway Inspection:

(1) The designated testing laboratory shall provide a roadway technician at the job site during all times concrete is being placed. This roadway technician shall be responsible to perform the required field tests and promptly notify the Contractor and the CER of any sub-standard materials, workmanship or code violations being incorporated in the work.

(2) Samples of fresh concrete shall be gathered in accordance with A.S.T.M. C-172 (latest revision).

(3) Tests for slump - A.S.T.M. C-143 (latest revision) and air content - A.S.T.M. C-173 or C-231 (latest revisions) if applicable, must be performed whenever test cylinders are taken, and more frequently, when deemed necessary.

(4) The concrete temperature shall be measured and recorded when each set of cylinders are molded.

(5) Test cylinders shall be cast in accordance with A.S.T.M. C-31 (latest revision) as follows:

(i) Pavements: One set consisting of four (4) cylinders shall be cast for each one hundred (100) cubic yards or fraction thereof. An additional two (2) cylinders per set shall be cast for early strength determination.

(ii) Curbs, Driveways, and Sidewalks: One set of four (4) cylinders shall be cast in the a.m. (morning) and one set shall be cast in the p.m. (afternoon). A minimum of four (4) cylinders shall be cast per visit.

(iii) Combination Curb & Gutters: One set of four (4) cylinders shall be cast for each fifty (50) cubic yards or any fraction thereof. A minimum of four (4) cylinders shall be cast per visit.

(6) Test cylinders are to be tested in accordance with A.S.T.M. C-39 (latest revision) as follows:

2 @ 7 days of age.
2 @ 28 days of age.
1 @ 3 days of age (for verification of High Early Strength concrete).
1 @ 5 days of age (for verification of High Early Strength concrete).

(7) During production, if any truck of ready-mixed concrete fails to conform to specifications, the designated testing laboratory will immediately notify the Director and the Contractor and this material shall not be incorporated in the work.

(8) Re-tempering of concrete is not permitted.

(d) Cores for Thickness Verification:

(1) Cores shall be taken by the designated testing laboratory in accordance with Subsections C501.10 and C601.12 no later than fourteen (14) days after the conclusion of paving operations.

(2) Final locations of the cores shall be reported in a manner that is acceptable to the Director or his representative.

C743.03 ASPHALTIC CONCRETE MIXTURES:

(a) Tests and Inspections:

(1) The Contractor will be required to design the mixtures for optimum asphalt content and comply with all requirements of La. D.O.T.D. designation TR 303, Method A, however, Method B may be used when approved by the Director. Mixes which have been previously approved and are current within six (6) months may be submitted for approval subject to the same criteria as required by TR 303, Method A.

(2) The job mix formula shall be submitted for review by the designated testing laboratory and the Director supported by appropriate design data. No mixture shall be produced for the job until the Contractor's job mix formula has been approved by the Director. Approval or rejection of job mix formula shall be accomplished within seven (7) calendar days of submittal.

(b) Preliminary Tests: Prior to starting plant operations, the following materials will be sampled and/or tested by the designated testing laboratory:

(1) Obtain La. D.O.T.D. Certificates of Delivery covering asphalt cement in working tank. (Also to be obtained on a daily basis during production.)

(2) Obtain the refinery test report covering chemical and physical properties of the asphalt cement.

(3) Verify that the Anti-Stripping agent is included in the La. D.O.T.D. Qualified Products List.

(4) Other admixtures - La. D.O.T.D. Qualfied Products List.

(5) Aggregates - Verify that the source of aggregates to be used are included in the La. D.O.T.D. Qualified Products List.

(6) Sample the Contractor's fine sand. Test in accordance with A.A.S.H.T.O. T-90 to determine if plasticity index is four (4) or less. Visually inspect Contractor's stockpile to verify absence of clay balls and excessive clay coating.

(c) Tests Conducted at the Asphalt Plant: Tests to be conducted on the hot mix material at the asphalt plant will be conducted by the designated testing laboratory's plant technician. All tests will be conducted in accordance with La. D.O.T.D. specifications. Test results shall conform to the properties in Section 42. A sampling plan will be utilized such that samples are taken and tested as follows:

(1) 0 to 200 tons - Full sample is taken upon which the following tests are to be conducted:

Temperature - read to the nearest 5 degrees.

Extraction	
Extracted Gradation	TR 309
Per cent Extracted Asphalt Cement	TR 308
Per cent Crushed	TR 306

Marshall Stability & Flow	
(2 briquettes are made.)	TR 305
Unit Weight, Voids & Per cent	
V.F.A.	TR 304

Record Anti-strip content from meters and scales

(2) 201 to 400 tons - smaller sample is taken:

Temperature - read to the nearest 5 degrees.

Marshall Stability & Flow	
(1 briquette is made.)	TR 305

(3) 401 to 600 tons - Full sample is taken. Conduct tests as described for 0 to 200 tons.

(4) In excess of 600 tons - Smaller sample is taken. Conduct tests as described for 201 to 400 tons.

Mix temperatures at the time of molding the briquettes shall be within $15^{o}F$ of the mix temperature at the time of sampling.

In addition to the above, the temperature of the mix is to be taken at least once per hour, when the mix has been loaded into haul trucks and is ready to leave the plant.
If the test results during the production of a lot are outside the limits given in Table 1 of Section C501, the representative of the designated testing laboratory shall immediately notify the Contractor's qualified asphaltic concrete plant technician.

If the Contractor refuses to take appropriate corrective action, the designated testing laboratory representative shall recommend to the Director to discontinue the operation of the plant immediately and shall notify the Contractor of his action. The plant may resume production of mix

for the project only after the Contractor's qualified asphaltic concrete plant technician produces evidence to the designated testing laboratory representative that the problem has been corrected.

When an individual test or the average of tests representing the lot is outside acceptance limits shown in Table 1 of Section C501, an adjustment in unit price for the lot will be made in accordance with Table 2 of Section C501.

(d) Pavement Samples: The Contractor shall furnish samples at locations determined by the designated testing laboratory's roadway technician. These operations shall be witnessed by the designated testing laboratory's roadway technician.

(e) Pavement Density: Refer to subsection Table 2 of Section C501.

(f) Roadway Inspection.

(g) Inspection of roadway asphaltic concrete work at the job site shall be performed by the roadway technician furnished by the designated testing laboratory. His duties will include, but not be limited to, the following:

(1) Record locations, tonnage, type of mix, lot number, and other pertinent data in his daily report.

(2) Temperatures will be checked and recorded in accordance with these specifications during the production of each lot.

(3) Observe the general operations of the Contractor to assure compliance with all requirements.

(4) Observe and record the tack and prime coat operations. (Square yards covered number of gallons used.)

(5) Determine the location of cores to be taken by the Contractor for thickness and density.

(6) Witness the drilling or cutting of the roadway samples and deliver same to designated testing laboratory for further testing.

(7) Witness the surface finish testing performed by the Contractor and report the findings of such testing.

(8) Inspect all mix hauled to the roadway for any obvious deficiencies which may include uncoated aggregate, segregated mixtures, mixtures with lumps, mix which is not of the proper temperature, excessive moisture, color and general appearance of the mixtures. Any loads found deficient shall be brought to the attention of the Contractor and rejected by the Director. Also, no trucks will be accepted without a haul ticket.

(9) Observe weather conditions and advise the Contractor of weather limitations when they apply.

C743.04 ROADWAY BASE & SUB-BASE COURSES:

(a) Soil materials, whether from required excavation or borrow excavation, which are to be incorporated in the project as fill or backfill, shall have been tested and classified by the Testing Laboratory prior to their use. Tests shall be conducted in accordance with the latest applicable standards of A.S.T.M., A.A.S.H.T.O., or La. D.O.T.D., and shall comply with the requirements of Section C302.

(b) Tests.

(1) Obtain a composite sample of base and sub-base material at source in accordance with A.S.T.M. D75 or A.A.S.H.T.O. T2.

(2) Perform Laboratory tests as follows:

A.S.T.M. C136 Sieve analysis of fine and coarse aggregates.
A.S.T.M. D4318 Test for liquid limit and plasticity index of soils.
A.S.T.M. D698, D1557, A.A.S.H.T.O. T99, T180, La. D.O.T.D. TR-418E, TR 418G Moisture-Density relations of soils and soil-aggregate mixtures (Proctor).
A.S.T.M. D2922, D1556, A.A.S.H.T.O. T191, T238 Density of soils and soil aggregate mixtures in place by nuclear or sand-cone methods.

(c) Field density tests shall be made on the completed base or sub-base courses and the depth of test recorded.

Frequency for Soil tests shall be as follows:

Trenches - 1 per 100 linear feet.

Backfill is to be placed and tested in 12" lifts when sand is compacted with a mechanical device, and in 3 foot lifts when flooding method is used.

Base Course - Six (6) tests per block.

Concrete roadway - 3 per side evenly spaced Asphalt/Conc. Curb - 4 under curb (2/side) and 2 in the roadway (1/side).

Depth - One (1) at each density test

C743.05 PAYMENT: Payment for all testing shall be made at the unit prices as detailed in the testing Contract between the City and the testing laboratory.

SECTION C744
STREETLIGHTS

C744.01 DESCRIPTION: This work consists of providing and installing streetlights and establishing all lines and grades as provided on the plans or as directed. The Contractor shall be responsible for the accuracy of all measurements.

C744.02 REFERENCED SPECIFICATIONS:

Street Lighting Handbook, City of New Orleans
New Orleans Street Light Maps, City of New Orleans
Street Light System, City of New Orleans
Street Light Circuit Schematics, City of New Orleans

C744.03 COORDINATION WITH OTHER CONTRACTORS AND UTILITIES: The Contractor shall conduct his operations to work with other entities on the project site. The Contractor shall not delay, endanger, or avoidably interfere with the activities of others and shall provide access to the site as required by the Director.

C744.04 DAMAGE TO STRUCTURES: The Contractor shall save and hold harmless the City of any damage to structures resulting from activities under this contract. The Contractor shall take reasonable precautions (e.g. maintaining vibrations within state mandated limits) to reduce seismic stresses on building structures.

C744.05 SALVAGABLE MATERIALS: The City reserves the right to retain any demolished items that the Director deems salvageable prior to the Contractor removing any items from the site. The Contractor shall deliver all salvaged materials, at the Contractor's expense, to an approved City location.

C744.06 INSTALLING/REPLACING LUMINAIRES: The Contractor shall install Light Emitting Diodes (LED) fixtures for all new street light installations. If a mercury vapor ballast fails within a NEMA or Cobra Head fixture, the Contractor shall replace the luminaire and convert it to a comparable LED fixture.

C744.07 PAINTING STREET LIGHTS: All painting operations shall be conducted in accordance with the requirements of Section 811 of the LA DOTD Standard Specifications for Roads and Bridges, latest edition.

The Contractor shall be responsible for preparing and finishing all metal parts, fittings, pedestals, mast arms, and luminaires.

Type of Paint:

Primers:
Exterior rust inhibitive ferrous-metal primer for ferrous metal,
Exterior galvanized metal primer for zinc-coated metal,
Exterior aluminum primer under alkyd finishes for aluminum.

Finish Coat: Exterior full-gloss alkyd enamel. Gloss refers to high sheen finish with a gloss range more than 70 when measured at a 60-degree meter.

Standard colors are Bronze, Black, and “Jungle Green” FSTT-C-595, Color No. 14036.

Substitute products must be equal to specified paints for all qualitative requirements applicable to their use and must be approved by the Director.

Application: The preparation for finishing of new equipment shall be as follows:

Remove any hardware that is not to be painted. If removal is impractical or impossible, provide surface applied protection before surface preparation and painting.

Before applying paint, clean and prepare surfaces to manufacturer’s written instructions for each particular substrate condition as specified. Remove grease, oil, mill scale, and loose and flaking paint back to solid substrate.

Provide barrier coats over incompatible primers or remove and reprime.

Standards and posts shall have at least one coat of primer (the greater of 2.0 mils minimum or as recommended by the manufacturer) and two finish coats (the greater of 2.0 mils per coat, or as recommended by the manufacturer). Sand standards and posts lightly between each succeeding enamel coat.

If a prime coat has been applied by the supplier, prime coat shall not be required.

Factory enameled equipment and materials shall be examined for damaged paint after installation, and such damaged surfaces shall be repainted to the satisfaction of the Director. Factory-applied enamel finish in good condition and of appropriate color will be acceptable.

Do not paint concealed surfaces, finished metal surfaces, operating parts, and labels. Finished metal surfaces include the following:

Anodized aluminum
Stainless steel
Chromium plate

At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from work area.

Provide Wet Paint signs to protect newly painted finishes.

Apply paints only when temperatures of surfaces to be painted and surrounding air are between 45 and 95 deg F.

Do not apply paint in rain, fog, or mist; or when relative humidity exceeds 85 percent, or at a temperature less than 5 deg F above the dew point; or to a damp or wet surface. Painting may

continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

Provide primer and finish coat materials that are compatible with one another and with the substrates.

C744.08 TREE TRIMMING AROUND STREET LIGHTS: Tree trimmers shall be licensed arborists, authorized to perform tree trimming by the Department of Parks and Parkways. Tree trimming shall consist of pruning the foliage of one or more trees that restricts visible light of the luminaire. The upper branches shall be pruned a distance of three (3) feet from the top and sides of the luminaire. Branches and foliage below the luminaire shall be pruned below a 150-degree cone (75 degrees each side of a vertical line). No tree trimming shall be performed that will permanently damage the tree. All costs will be provided under C719(60) Tree Trimming.

PART VIII - STRUCTURES

This part shall conform to Part VIII of the LaDOTD Louisiana Standard Specifications for Roads and Bridges, latest edition. In case of conflict, the City Specifications shall govern.

PART IX - PORTLAND CEMENT CONCRETE

This part shall conform to Part IX of the LaDOTD Louisiana Standard Specifications for Roads and Bridges, latest edition. In case of conflict, the City Specifications shall govern.

PART X - MATERIALS

Unless otherwise stated and covered in previous sections and the following sections C1002, C1003 and C1018 of the Department of Public Works, City of New Orleans specifications, this part shall conform to Part X of the LaDOTD Louisiana Standard Specifications for Roads and Bridges, latest edition.
In case of conflict, the City specifications shall govern**.**

SECTION C1002
ASPHALTIC MATERIALS AND ADDITIVES

C1002.01 GENERAL: Asphalt shall be prepared by the refining of petroleum. Asphalt shall be uniform in character, free from water, and shall not foam when heated to 350^{o}F. Asphalt shall be from an approved source listed in the LaDOTD QPL 41.

Refinery or supplier storage tanks, piping, retorts, booster tanks and other equipment used in delivering, storing or handling asphaltic materials shall be kept clean and in good operating condition and shall be operated so as to avoid contamination of the contents with foreign materials.

Final test results for asphaltic materials will be applied to the proper table in this Section for conformance to specifications. Any deviation from the specifications will result in a payment adjustment as specified.

Samples taken at the refinery or supplier shall conform to specification requirements. When the refinery or supplier sample fails to meet these requirements, the material will be rejected and shall not be shipped to the jobsite.

When asphaltic materials sampled at the point of delivery do not conform to requirements for 100 percent pay, and in the opinion of the Director have resulted in an unsatisfactory product, the materials shall be removed and replaced or otherwise corrected at no direct pay. The adjustment in pay for asphaltic materials shall be applied only to samples taken at the point of delivery. When test results are such that a payment adjustment would result from more than one test value, the payment adjustment for the greatest reduction shall apply.

C1002.02 ASPHALTIC MATERIAL ADDITIVES:

(a) Anti-Strip: Anti-strip additives for asphaltic materials shall be approved products listed in QPL 57 and will be tested in accordance with DOTD TR 317.

(b) Silicone: Silicone additives for asphaltic materials shall be approved products listed in QPL 22.

SECTION C1003
AGGREGATES

C1003.01 GENERAL: Aggregates shall be from an approved source. For a source to be approved, each sample shall conform to the requirements specified and in the appropriate subsection. In addition to the test methods given in each subsection, the following methods shall be used in testing aggregates.

Property	**Test Method**
Deleterious materials	DOTD TR 119
Foreign Matter in Shell	DOTD TR 109
Unit Weight	AASHTO T 19
Sp1xific Gravity & Absorption of Fine Aggregate	AASHTO T 84
Specific Gravity & Absorption of Coarse Aggregate	AASHTO T 85
Polish Value	AASHTO T 278
Amount of Material Finer than the No. 200 Sieve	DOTD TR 112
Sieve Analysis (Gradation)	DOTD TR 113
Specific Gravity of Aggregate for Asphaltic Mixtures	DOTD TR 300
Liquid Limit and Plasticity Index	DOTD TR 428

When the No. 200 sieve is included in the gradation requirements, the results obtained by washing in accordance with DOTD TR 112 shall be added to that obtained by dry sieving in accordance with DOTD TR 113, unless otherwise specified.

(a) Source Approval:

(1) Soundness: The soundness loss of recycled portland cement concrete and aggregates listed in LaDOTD QPL 2 shall not exceed 15 percent when subjected to 5 cycles of the magnesium sulfate soundness test in accordance with AASHTO T 104.

(2) Abrasion: Coarse aggregate listed in LaDOTD QPL 2, and recycled portland cement concrete, except lightweight aggregate shall show an abrasion loss of not more than 40 percent when tested in accordance with AASHTO T 96.

Lightweight aggregate shall be expanded clay or expanded shale and shall show an abrasion loss of not more than 40 percent when tested in accordance with DOTD TR 111.

(3) Recycled portland cement concrete shall be approved in dedicated stockpiles and shall be free of asphaltic concrete overlay material, reinforcing steel, joint material and other debris. After processing, recycled portland cement concrete shall conform to the requirements specified in the appropriate Subsections. When a stockpile has been approved no other material shall be added without prior approval.

(4) Reclaimed asphaltic pavement shall be cold planed in accordance with Section C509 or crushed. Reclaimed asphaltic concrete shall be approved either at the time of removal from the roadway or in stockpiles. Stockpiled materials shall be uniform and reasonably free of lightweight aggregate, asphaltic concrete friction course, debris, soil, and other foreign matter.

(5) During source approval, aggregates for use in portland cement concrete will be tested in accordance with ASTM C 33 Appendix XI for alkali reactivity properties. Aggregates found to be potentially reactive with cement alkalies will be restricted for use with cement or a combination of cement and fly ash containing 0.6 percent or less alkalies (sodium oxide equivalent).

Fine aggregate for portland cement concrete that produces a color darker than the Organic Color No. 3 when tested in accordance with AASHTO T 21, will be subjected to the mortar strength test in accordance with AASHTO T 71. The minimum compressive strength shall be at least 95 percent of the reference mortar compressive strength.

(b) Acceptance Testing: Acceptance of aggregates shall be based on consistent conformation to the requirements for source approval in Heading (a).

C1003.02 AGGREGATES FOR ASPHALTIC MIXTURES: Aggregates for asphaltic mixtures shall conform to the requirements of Subsection C1003.01 except that reclaimed asphaltic pavement, recycled portland cement concrete, crushed shell, sand gravel and fine sand are not required to be from sources listed on LaDOTD QPL 2 but shall be from approved sources.

(1) Gravel, Stone and Crushed Slag: These aggregates shall conform to Subsection C1003.05 for deleterious substances.

These aggregates shall be assigned a Friction Rating as follows:

FRICTION RATING	DESCRIPTION
I	Aggregates that have a Polish Value of greater than 37 and demonstrate the ability to retain acceptable friction numbers for the life of the pavement.
II	Aggregates that have a Polish Value of 35 to 37 and demonstrate the ability to retain acceptable friction numbers for the life of the pavement.
III	Aggregates that have a Polish value of 30 to 34 and demonstrate that ability to retain acceptable friction numbers for the life of the pavement.
IV	Aggregates with a Polish Value of 20 to 29.

(2) Coarse Sand: Coarse sand shall be natural occurring sand processed to meet asphaltic mixture requirements, shall be graded from coarse to fine, and shall be free from vegetative and other foreign matter.

(3) Fine Sand: Fine sand shall be natural occurring sand processed to meet asphaltic mixture requirements, and shall be free from vegetative and other foreign matter.

The fine sand shall be non plastic and no clay balls or clay lumps shall be incorporated into the asphaltic mixture. The gradation shall have a maximum of 35 percent passing the No. 200 sieve. Clay lumps shall not exceed 1.00 percent by weight when sampled from the stockpile and tested in accordance with DOTD TR 119.

(4) Natural Sand: Natural sand shall be coarse sand or a combination of coarse sand and fine sand which is used in the asphaltic concrete mixture. Natural sand shall consist of clean, hard, durable, siliceous grains graded from coarse to fine and shall be reasonably free from vegetative matter or other deleterious materials.

The sand equivalent of the fraction passing the No. 4 sieve of the natural sand in the asphaltic concrete mixture shall be less than 35 when tested in accordance with DOTD TR 120.

(5) Crushed Shell: Shell material shall consist of clam or reef shell. Foreign matter (DOTD TR 109) such as silt and clay shall not exceed 5 percent, and such material shall be dispersed throughout the mass.

(6) Screenings: Screenings, when used, shall be made by crushing aggregates which conformed to the requirements for coarse aggregates in Subsection C1003.01. Screenings shall meet the following gradation requirements.

U.S. Sieve	Percent Passing
3/8"	100
No. 4	80 - 100

(7) Pit Run Sand-Gravel: Pit run sand gravel may be used in Type 5 mixes provided the material is separated into 2 sizes prior to final mixing. The separation shall be done by using a No. 4 screen or other approved sizes. For batch plants the screening process shall be adequate to satisfy this requirement. Pit run sand-gravel shall be non-plastic. No clay balls or clay lumps shall be incorporated into the asphaltic mixture. Clay lumps shall not exceed 1.00 percent by weight when tested in accordance with DOTD TR 119.

(8) Recycled Portland Cement Concrete: Recycled portland cement concrete source shall meet the requirements of Subsection C1003.02(b)(4). The maximum amount of deleterious materials shall conform to Subsection C1003.05.

(9) Reclaimed Asphaltic Pavement (RAP): Reclaimed asphaltic material shall conform to Subsection C1003.01.

(10) Mineral Filler: Mineral filler shall be an approved product listed on LaDOTD QPL 10 and shall consist of limestone dust, pulverized hydrated lime, shell dust, portland cement, or cement stack dust. Mineral dust collected in bag houses or by other dust collectors at asphaltic concrete plants is not classified as mineral filler. Cement stack dust shall consist of material collected form waste rotary kiln gases discharged through a collector of a cement plant. Mineral filler shall conform to the following gradation:

U.S. Sieve	**Percent Passing**
No. 30	100
No. 80	95 - 100
No. 200	70 - 100
No. 270	60 - 100

Mixtures of aggregate, filler and asphalt, in proportions to meet the requirements of mixes being used, shall have an index of retained Marshall Stability (DOTD TR 313) of at least 85 percent, and a maximum of 1.0 percent volumetric swell (DOTD TR 313).

SECTION C1018
MISCELLANEOUS MATERIALS

C1018.01: Lime shall be hydrated lime or quicklime from an approved source listed in QPL 34.

(a) Hydrated Lime shall conform to ASTM C 207, Type S, except that maximum free moisture shall be 1.5 percent.

(b) Quicklime shall conform to the following chemical requirements:

Minimum CaO + MgO: 90 percent by weight of total material.
Maximum MaO: 8 percent by weight of total material.

Quicklime shall be protected from contact with moisture prior to testing, shall be free flowing and graded so that 100 percent will pass a 3/8 inch sieve. When the quicklime is to be used in a slurry, the gradation shall be a minimum of 95 percent passing the 3/4 inch sieve.

C1018.02 FORM RELEASE AGENT: Form release agent for concrete shall be an approved product listed in QPL 29.

PART XI - SYSTEMS OF MEASUREMENT (FOR FUTURE USE)

PART XII - STANDARD BID ITEMS

ITEM NO.	PAY ITEM	PAY UNIT	DECIMALS
	SECTION C201 CLEARING AND GRUBBING		
C201(01)	CLEARING AND GRUBBING	LUMP SUM	0
	SECTION C202 - REMOVAL OF STRUCTURES AND OBSTRUCTIONS		
C202(52)(C)	REMOVAL AND DISPOSAL OF EXISTING PORTLAND CEMENT CONCRETE PAVEMENT	SQUARE YARD	1
C202(52)(D)	REMOVAL AND DISPOSAL OF EXISTING SIDEWALK DRIVEWAY, FOOT LAP (CONCRETE, BRICK, ASPHALT, ETC.)	SQUARE YARD	1
C202(52)(E)	REMOVAL AND DISPOSAL OF EXISTING CURB (CONCRETE,ASPHALT,BRICK,ETC.)	LINEAR FOOT	1
C202(52)(F)	REMOVAL OF EXISTING CURB AND GUTTER BOTTOM	LINEAR FOOT	1
C202(52)(G)	REMOVAL AND DISPOSAL OE EXISTING GUTTER BOTTOM OR ROLLING STRIP	LINEAR FOOT	1
C202(52)(I)	REMOVAL AND DISPOSAL OF EXISTING ASPHALTIC CONCRETE PAVEMENT	SQUARE YARD	1
C202(53)(C)	REMOVAL AND DISPOSAL OF EXISTING CONCRETE BUS PAD	SQUARE YARD	1
C202(54)(A)	REMOVAL AND DISPOSAL OF CONCRETE OR STONE HEADERS	LINEAR FOOT	1
C202(54)(B)	REMOVAL AND SALVAGE OF STONE HEADERS	LINEAR FOOT	1
C202(55)	SAW CUT CONCRETE CURB, PAVEMENT, SIDEWALK, DRIVEWAY, ETC. ACCORDING TO PLANS ("DEPTH)	LINEAR FOOT	0
C202(56)	SAW CUT, WHEEL CUT OR SPADE CUT EXISTING ASPHALT, ACCORDING TO PLANS	LINEAR FOOT	0
	SECTION C203 - PREPARATION OF ROADWAY PAVEMENT SUBGRADE		
C203(51)	ROADWAY EXCAVATION	CUBIC YARD (THEO. SECT.)	0
C203(53)	SHAPE DITCHES	LINEAR FOOT	0
C203(58)	UNSUITABLE SUBGRADE & EXCAVATION & FILLING	CUBIC YARD (TRUCK MEA.)	0
C203(59)	GEOTEXTILE FABRIC FOR STABILIZATION	SQUARE YARD	0
C203(60)	GEOGRID	SQUARE YARD	0
C204(01)	TEMPORARY SANDBAGGING	CUBIC YARD	0
C204(02)	TEMPORARY HAY OR STRAW BAILES	EACH	0
C204(03)	TEMPORARY SLOPE DRAINS	LINEAR FOOT	0
C204(04)	TEMPORARY SEDIMENT BASINS	EACH	0

ITEM NO.	PAY ITEM	PAY UNIT	DECIMALS
C204(05)	TEMPORARY SEDIMENT CHECK DAMS	EACH	0
C204(06)	TEMPORARY SILT FENCING	LINEAR FOOT	0
C204(07)	TEMPORARY STONE CONSTRUCTION ENTRANCE	CUBIC YARD	0
C204(08)	CURB INLET DRAIN FILTER (9" Diam. X 8 Ft. Long)	EACH	0
C204(09)	CURB INLET DRAIN FILTER (6" Diam. X 6 Ft. Long)	EACH	0
	SECTION C302 - BASE AND SUBBASE COURSE		
C302(51)	BASE COURSE	CUBIC YARD (NET SECT.)	1
C302(53)	SUBBASE COURSE	CUBIC YARD (NET SECT.)	1
	SECTION C306 - SCARIFYING AND COMPACTING ROAD BED		
C306(52)	SCARIFYING AND COMPACTING ROAD BED	SQUARE YARD	0
	SECTION C402 - TRAFFIC MAINTENANCE AGGREGATE		
C402(51)	TRAFFIC MAINTENANCE AGGREGATE	CUBIC YARD (TRUCK MEA.)	0
	SECTION C501 - ASPHALTIC CONCRETE MIXTURES		
C501(51)	ASPHALTIC CONCRETE	TON	1
C501(52)	ASPHALTIC CONCRETE	CUBIC YARD	1
C501(53)	ASPHALTIC CONCRETE (___" THICK)	SQUARE YARD	1
C501(54)	GEOTEXTILE FABRIC FOR PAVING	SQUARE YARD	0
	SECTION C502 – SUPERPAVE ASPHALTIC CONCRETE PAVEMENT		
C502(51)	SUPERPAVE ASPHALTIC CONCRETE	TON	1
C502(52)	SUPERPAVE ASPHALTIC CONCRETE	CUBIC YARD	1
C502(53)	SUPERPAVE ASPHALTIC CONCRETE (___" THICK)	SQUARE YARD	1
	SECTION C506 - POROUS ASPHALTIC PAVEMENT		
C506(51)	POROUS ASPHALTIC CONCRETE	TON	1
C506(52)	POROUS ASPHALTIC CONCRETE	CUBIC YARD	1
C506(53)	POROUS ASPHALTIC CONCRETE (___" THICK)	SQUARE YARD	1
	SECTION C507 - ASPHALTIC BINDERS		
C507(51)	ASPHALTIC BINDER	SQUARE YARD	1
	SECTION C509 - COLD PLANING ASPHALTIC PAVEMENT		
C509(51)	COLD PLANING ASPHALTIC PAVEMENT (___" AVERAGE THICK)	SQUARE YARD	0

ITEM NO.	PAY ITEM	PAY UNIT	DECIMALS
	SECTION C601 - PORTLAND CEMENT CONCRETE PAVEMENT		
C601(54)	REINFORCED CONCRETE PAVEMENT (___" THICK)	SQUARE YARD	1
C601(55)	SURCHARGE FOR HIGH EARLY STRENGTH	SQUARE YARD	1
C601(56)	REINFORCED CONCRETE BUS PAD (___" THICK)	SQUARE YARD	1
	SECTION C604 - PERVIOUS CONCRETE PAVEMENT		
C604(54)	PERVIOUS CONCRETE PAVMENT (___" THICK)	SQUARE YARD	1

Letter designations for pavement thickness shall be:

A.....5"	F.....7-1/2"	K..... 10"	P..... 12-1/2"
B.....5-1/2"	G.....8"	L..... 10-1/2"	Q..... 13"
C.....6"	H.....8-1/2"	M..... 11"	R..... 13-1/2"
D.....6-1/2"	I.....9"	N..... 11-1/2"	S..... 14"
E.....7"	J.....9-1/2"	O..... 12"	T..... 14-1/2"

Example:

C601(03)(K) PORTLAND CEMENT CONCRETE 25.4 C.M. THICK (10" THICK)

	SECTION C701 - CULVERTS AND STORM DRAINS		
C701(53)	REINFORCED CONCRETE PIPE (SIZE)	LINEAR FOOT	0
C701(54)	REINFORCED CONCRETE ARCH PIPE (SIZE)	LINEAR FOOT	0
C701(57)	YARD DRAIN SERVICE LINE (SIZE & TYPE)	LINEAR FOOT	0
C701(58)	RESET CULVERT PIPE (SIZE)	LINEAR FOOT	0
C701(59)	REINFORCED CONCRETE WYE OR ARCH EQUIVALENT - NEW (SIZE)	EACH	0
C701(65)	REINFORCED CONCRETE WYE OR ARCH EQUIVALENT - EXISTING (SIZE)	EACH	0
C701(66)	CONCRETE TEE (SIZE)	EACH	0
C701(67)	CLEAN AND FLUSH CULVERT	LINEAR FOOT	0
C701(68)	POINT REPAIR OF EXISTING DRAIN LINES UP TO 10 FEET (SIZE)	EACH	0
C701(69)	POINT REPAIR OF EXISTING DRAIN LINES BEYOND 10 FEET	LINEAR FOOT	0
C701(70)	DRAIN HOUSE CONNECTIONS (SIZE & TYPE)	EACH	0
C701(72)	COLLECTOR LINE TO CATCH BASINS FOR DRAIN HOUSE CONNECTIONS (SIZE)	LINEAR FOOT	0
C701(73)	ABANDONING EXISTING DRAINAGE PIPES IN PLACE AND FILL WITH FLOWABLE MATERIAL (SIZE)	LINEAR FOOT	0
C701(74)	REMOVAL AND DISPOSAL OF EXISTING DRAIN LINES NOT IN SAME TRENCH) INCLUDING	LINEAR FOOT	0

BACKFILING WITH RIVER SAND AND COMPATION

Letter Designations shall be used for the various pipe sizes as follows:

Circular Pipe (Inches)	
4....A	60....Q
6....B	66....R
8....C	72....S
10....D	78....T
12....E	84....U
15....F	90....V
18....G	96....W
21....H	102....X
24....I	108....Y
27....J	114....Z
30....K	120....1
33....L	126....2
36....M	132....3
42....N	138....4
48....O	144....5
54....P	

Arch Pipe (Inches)		
Concrete (RCPA)	**Equivalent Diameter**	**Letter Designation**
18 X 11	15	F
22 X 13	18	G
26 X 15	21	H
28 X 18	24	I
36 X 22	30	K
43 X 26	36	M
51 X 31	42	N
58 X 36	48	O
65 X 40	54	P
73 X 45	60	Q
-	66	R
88 X 54	72	S
-	78	T
102 X 62	84	U
115 X 72	90	V
122 X 77	96	W
-	102	X
138 X 87	108	Y
-	114	Z
154 X 96	120	1

Examples:

C701(54)(Y) Reinforced Concrete Arch Pipe (138 X 87).

C701(57)(C) PVC Yard Drain service line (8").

ITEM NO.	PAY ITEM	PAY UNIT	DECIMALS
	SECTION C702 - MANHOLES, CATCH BASINS, DROP INLETS AND CLEAN OUTS		
C702(52)(J)	NO. 1 STANDARD DRAIN MANHOLE	FOOT HEIGHT	1
C702(52)(K)	NO. 1 STANDARD DRAIN MANHOLE	FOOT HEIGHT	1
C702(52)(L)	NO. 3 STANDARD DRAIN MANHOLE	FOOT HEIGHT	1
C702(52)(M)	SPECIAL DRAIN MANHOLE	EACH	0
C702(52)(N)	SPECIAL CONFLICT MANHOLE	EACH	0
C702(52)(J)	TYPE A CATCH BASINS ADJUSTMENT	EACH	0
C702(53)(K)	TYPE B CATCH BASINS ADJUSTMENT	EACH	0
C702(53)(L)	TYPE C CATCH BASINS ADJUSTMENT	EACH	0
C702(53)(M)	NO. 1 STANDARD CATCH BASIN	EACH	0
C702(53)(N)	DOUBLE NO. 1 CATCH BASIN	EACH	0
C702(53)(O)	NO. 2 STANDARD CATCH BASIN	EACH	0
C702(53)(P)	NO. 3 STANDARD CATCH BASIN	EACH	0
C702(53)(Q)	NO. 4 STANDARD CATCH BASIN	EACH	0
C702(53)(R)	NO. 5 STANDARD CATCH BASIN	EACH	0
C702(53)(S)	24" X 30" CLEAR OPENING STANDARD DROP INLET	EACH	0
C702(53)(T)	SINGLE MOUNTABLE CATCH BASINS	EACH	0
C702(53)(U)	DOUBLE MOUNTABLE CATCH BASINS	EACH	0
C702(53)(V)	REHABILITATE EXISTING CATCH BASIN	EACH	0
C702(54)(I)	REHABILITATE EXISTING MANHOLE	FOOT HEIGHT	1
C702(54)(K)	TAP-IN TO EXISTING DRAINLINE	EACH	0
C702(54)(A)(1)	ADJUST MANHOLE OR DROP INLET UP TO 6" WITH BRICK AND MORTAR	EACH	0
C702(54)(A)(2)	ADJUST MANHOLE WITH RINGS UP TO 4"	EACH	0
C702(54)(A)(3)	ADJUST MANHOLE OR DROP INLET OVER 6" WITH BRICK AND MORTAR	EACH	0
C702(55)(C)	6" DRAIN CLEAN OUT FOR ROOF DRAINS.	EACH	0
C702(56)	CLEAN OUT BOX EXISTING CULVERT	EACH	0
C702(57)	CLEAN OUT BOX NEW CULVERT	EACH	0
	SECTION C706 - DRIVEWAYS AND SIDEWALKS		
C706(51)	CONCRETE SIDEWALK (___" THICK)	SQUARE YARD	1
C706(52)	CONCRETE DRIVEWAY (___" THICK)	SQUARE YARD	1
C706(54)	SIDEWALK AT INTERSECTION INCLUDING HANDICAPPED RAMPS (___" THICK)	SQUARE YARD	1
C706(55)	SIDEWALK IN MEDIAN INCLUDING HANDICAPPED RAMPS	SQUARE YARD	1
C706(56)	HANDICAPPED RAMP (SPECIFY CONCRETE BRICK OR STONE)	SQUARE YARD	1
C706(57)	BRICK SIDEWALK.	SQUARE YARD	1
C706(58)	RELAYING BRICK SIDEWALK	SQUARE YARD	1
C706(59)	STONE SIDEWALK	SQUARE YARD	1
C706(60)	RELAYING STONE SIDEWALK	SQUARE YARD	1
C706(61)	LETTER OR NUMBER FOR TILE STREET NAME	EACH	0

ITEM NO.	PAY ITEM	PAY UNIT	DECIMALS
C706(62)	RESETTING TILE STREET NAME	EACH	0

Letter Designations for various thickness shall be used as follows:

4"...A 7"...D
5"...B 8"...E
6"...C 9"...F

Example: ITEM C706(52)(E) CONCRETE DRIVEWAY 8"

SECTION C707 - CURBS AND GUTTERS

C707(54)	ASPHALTIC CURB	LINEAR FOOT	1
C707(55)	CONCRETE MOUNTABLE CURB WITH OR WITHOUT DOWELS (STRAIGHT, CIRCULAR OR DEPRESSED)	LINEAR FOOT	1
C707(56)	6" CONCRETE BARRIER CURB WITH OR WITHOUT DOWELS (STRAIGHT, CIRCULAR OR DEPRESSED)	LINEAR FOOT	1
C707(57)	8" CONCRETE BARRIER CURB WITH OR WITHOUT DOWELS (STRAIGHT, CIRCULAR OR DEPRESSED)	LINEAR FOOT	1
C707(58)	CONCRETE GUTTER BOTTOM OR ROLLING STRIP	LINEAR FOOT	1
C707(59)	MOUNTABLE CURB AND GUTTER BOTTOM	LINEAR FOOT	1
C707(60)	6" BARRIER CURB & GUTTER BOTTOM OR ROLLING STRIP	LINEAR FOOT	1
C707(61)	8" BARRIER CURB & GUTTER BOTTOM OR ROLLING STRIP	LINEAR FOOT	1
C707(62)	STONE CURB INCLUDING BASE (STRAIGHT, CIRCULAR OR DEPRESSED)	LINEAR FOOT	1
C707(63)	RESET EXISTING CURB (PRECAST CONCRETE, STONE, ETC.) INCLUDING BASE	LINEAR FOOT	1
C707(64)	TIMBER CURB	MBFM	2

SECTION C713 - TEMPORARY SIGNS, BARRICADES AND PAVEMENT MARKINGS

C713(51)	TEMPORARY SIGNS, BARRICADES AND PAVEMENT MARKINGS	LUMP SUM	0

SECTION C714 - SODDING

C714(51)	SODDING	SQUARE YARD	1

ITEM NO.	PAY ITEM	PAY UNIT	DECIMALS
	SECTION C717 - SEEDING		
C717(51)	SEEDING	LUMP SUM	0
	SECTION C719 - LANDSCAPING		
C719(55)	GRAVEL BED AND FILTER CLOTH OVER TREE ROOTS	SQUARE YARD	1
C719(56)	TREE PROTECTION	LINEAR FOOT	0
C719(57)	TREE REMOVAL (DBH SIZE, TYPE)	EACH	0
C719(58)	TREE REPLACEMENT (DBH SIZE, TYPE)	EACH	0
C719(59)	TREE RELOCATION (DBH SIZE TYPE)	EACH	0
C719(60)	TREE TRIMMING	LUMP SUM	0
C719(61)	ROOT PRUNING	EACH	0
C719(62)	ROOT TRENCHING	EACH	0
	SECTION C723 - GRANULAR MATERIAL		
C723(52)	BATTURE SAND FOR DRESSING, GRANULAR MATERIAL FOR OTHER ADJUSTMENTS	CUBIC YARD (T.M.)	0
	SECTION C724 - PAVEMENT REPAIR, JOINT REPAIR AND CRACK REPAIR		
C724(51)(A)	ASPHALTIC CONCRETE REPAIR	SQUARE YARD	0
C724(51)(B)	CONCRETE FOUNDATION REPAIR WITH ASPHALT OVERLAY	SQUARE YARD	0
C724(51)(C)	CONCRETE PAVEMENT REPAIR	SQUARE YARD	0
C724(53)(A	CONCRETE JOINT REPAIR	SQUARE YARD	0
C724(53)(B)	JOINT RESEALING	LINEAR FOOT	0
C724(54)(A)	CRACK REPAIR BETWEEN 1/8" AND 1/2" WIDE	LINEAR FOOT	0
C724(54)(B)	CRACK REPAIR GREATER THAN 1"	LINEAR FOOT	0
C724(55)	POT HOLE REPAIR ON ACCESS ROUTE	TON	1
	SECTION C727 - MOBILIZATION		
C727(51)	MOBILIZATION	LUMP SUM	0
	SECTION C728 - JACKED AND BORED PIPE		
C728(51)	JACKED OR BORED PIPE (SIZE, TYPE, CLASS OR THICKNESS)	LINEAR FOOT	0
	SECTION C729 - TRAFFIC SIGNS AND DEVICES		
C729(51)	TRAFFIC SIGN	EACH	0
C729(54)	DELINEATOR ASSEMBLY	EACH	0

ITEM NO.	PAY ITEM	PAY UNIT	DECIMALS
C729(66)	OBJECT MARKER ASSEMBLY	EACH	0
C729(71)(A)	STREET NAME SIGN ON EXISTING POST	EACH	0
C729(71)(B)	STREET NAME SIGN ON NEW POST	EACH	0
C729(72)	PROJECT SIGN	EACH	0

SECTION C731 - RAISED PAVEMENT MARKERS

C731(52)	REFLECTORIZED RAISED PAVEMENT MARKERS	EACH	0

SECTION C732 - PLASTIC PAVEMENT MARKINGS

C732(52)	PLASTIC PAVEMENT STRIPING (SOLID LINE)	LINEAR FOOT	0
C732(53)	PLASTIC PAVEMENT STRIPING (BROKEN LINE)	LINEAR FOOT	0
C732(54)	PLASTIC PAVEMENT LEGENDS & SYMBOLS	EACH	0
C732(55)	PLASTIC PAVEMENT STRIPING REMOVAL	LINEAR FOOT	0

Letter designations for various widths shall be used as follows:

4"...A, 6"...B, 8"...C, 12"...D, 24"...E

SECTION C736 - RESTORATION OF TRAFFIC SIGNAL LOOP DETECTORS

C736(59)	LOOP DETECTOR	LINEAR FOOT	0

SECTION C740 – CONSTRUCTION LAYOUT

C740(51)	Construction Layout	LUMP SUM	0

SECTION C741 - WATER MAINS UP TO 12" IN DIAMETER

C741(51)	(SIZE) (MATERIAL) NEW WATER MAIN WITH MAIN LINE FITTINGS	LINEAR FOOT	0
C741(51)	8” PVC NEW WATER MAIN WITH MAIN LINE FITTINGS BY DIRECTIONAL DRILLING	LINEAR FOOT	0
C741(52)	NEW (SIZE)" VALVE	EACH	0
C741(53)	TAPPING SLEEVE & VALVE ASSEMBLY TO NEW MAIN (SIZE)	EACH	0
C741(54)	NEW FIRE HYDRANT	EACH	0
C741(55)(A)	REPLACE 5/8" TO 1” WATER HOUSE WITH 1” WATER HOUSE CONNECTION (FROM MAIN TO METER)	EACH	0
C741(55)	REPLACE (SIZE) WATER HOUSE CONNECTION (FROM MAIN TO METER)	EACH	0
C741(55)(G)	REMOVE AND REPLACE WATER HOUSE CONNECTION FROM METER TO PROPERTY LINE 5/8” TO 1”	EACH	0

ITEM NO.	PAY ITEM	PAY UNIT	DECIMALS
C741(56)	RELOCATION OF FIRE HYDRANT (IN EXISTING MAIN)	EACH	0
C741(70)	ADDITIONAL CAST IRON FITTINGS	TON	2
C741(71)(B-01)	6" WATER LINE OFFSET UP TO 24"	EACH	0
C741(71)(C-01)	8" WATER LINE OFFSET UP TO 24"	EACH	0
C741(71)(E-01)	12" WATER LINE OFFSET UP TO 24"	EACH	0
C741(72)(B-02)	6" WATER LINE OFFSET OVER 24"	EACH	0
C741(72)(C-02)	8" WATER LINE OFFSET OVER 24"	EACH	0
C741(72)(E-02)	12" WATER LINE OFFSET OVER 24"	EACH	0
C741(73)	ADJUST WATER VALVE BOX	EACH	0
C741(74)	NEW WATER VALVE MANHOLE (SIZE)	EACH	0
C741(75)	REMOVE MUD AND DEBRIS FROM INSIDE OF WATER METER BOX	EACH	0
C741(76)	ADJUST COMPLETE WATER METER BOX TO GRADE	EACH	0
C741(77)	REPLACE BROKEN WATER METER BOX (5/8") TO (1")	EACH	0
C741(78)	PLUG EXISTING WATER MAIN (SIZE) AND FILL WITH FLOWABLE MATERIAL (SAND/CEMENT MIXTURE)	LINEAR FOOT	0
C741(79)	(SIZE) WATER MAIN CHLORINATIN	LINEAR FOOT	0

SECTION C742 - SEWER LINES

C742(51)	INSTALL SEWER MAINS (SIZE & DEPTH)	LINEAR FOOT	0
C742(55)	INSTALL SEWER MANHOLE	FOOT HIGH	1
C742(56)	REPLACE SEWER MANHOLE CASTING	EACH	0
C742(57)	SEWER POINT REPAIR UP TO 10 FEET (SIZE & DEPTH)	EACH	0
C742(58)	SEWER POINT REPAIR BEYOND 10 FEET(SIZE & DEPTH)	LINEAR FOOT	0
C742(59)	NEW SEWER HOUSE CONNECTIONS FROM MAIN TO BACK OF CURB (SIZE)	EACH	0
C742(60)	REPLACE EXISTING SEWER HOUSE CONNECTION FROM EXISTING MAIN TO BACK OF CURB	EACH	0
C742(61)	RE-CONNECT EXISTING SEWER HOUSE CONNECTION TO NEW MAIN UP TO 3 FEET	EACH	0
C742(62)	RE-CONNECT EXISTING SEWER HOUSE CONNECTION TO NEW MAIN AND EXTEND TO BACK OF CURB	EACH	0
C742(63)	REPLACE EXISTING SEWER HOUSE CONNECTION BEYOND BACK OF CURB	LINEAR FOOT	0
C742(64)	ADJUST SEWER HOUSE CONNECTION	EACH	0
C742(65)	PIPE LINING (SIZE & METHOD)	LINEAR FOOT	0
C742(66)	CUT LINER TO RESTORE EXISTING SEWER HOUSE CONNECTION (SIZE & METHOD)	EACH	0

Letter designations shall be used for various pipe sizes as follows:

4". .....A	15" .. .. F
6". .....B	18" .. .. G
8". C	21" .. .. H
10".....D	24" I
12".....E	27" .. .. J

Letter designations shall be used for various depth brackets, as follows:

0' - 6.0' ....A	
6.1' - 8.0'..... .....B	
8.1' - 10.0'..... C	
10.1' - 12.0'..... .....D	
12.1' - 14.0'..... .....E	
14.1' - 16.0'..... .....F	

INTENTIONALLY LEFT BLANK